Color Laser MFP

CLX-4195 series

CLX-4195N / 4195FN / 4195FW

(Ver 1.0)

SERVICE MANUAL

Color Laser MFP

Contents

1. Precautions
2. Product specification and description
3. Disassembly and Reassembly
4. Alignment and Troubleshooting
5. System Diagram
6. Reference Information

Refer to the service manual in the GSPN (see the rear cover) for more information.

Contents

1. Precautions ..... 1 − 1
1.1. Safety warning ..... 1 − 1
1.2. Caution for safety ..... 1 − 2
1.2.1. Toxic material ..... 1 − 2
1.2.2. Electric shock and fire safety precautions ..... 1 − 2
1.2.3. Handling precautions ..... 1 − 3
1.2.4. Assembly and Disassembly precautions ..... 1 − 3
1.2.5. Disregarding this warning may cause bodily injury ..... 1 − 4
1.3. ESD precautions ..... 1 − 5
2. Product specification and description ..... 2 − 1
2.1. Product Specification ..... 2 − 1
2.1.1. Product Overview ..... 2 − 1
2.1.2. Specifications ..... 2 − 2
2.1.2.1. General Print Engine ..... 2 − 2
2.1.2.2. Copy ..... 2 − 2
2.1.2.3. Scan ..... 2 − 4
2.1.2.4. Fax ..... 2 − 5
2.1.2.5. Controller and Software ..... 2 − 7
2.1.2.6. Paper Handling ..... 2 − 10
2.1.2.7. Reliability and Service ..... 2 − 12
2.1.2.8. Environment ..... 2 − 12
2.1.2.9. Consumables ..... 2 − 13
2.1.2.10. Maintenance Parts ..... 2 − 13
2.1.2.11. Option ..... 2 − 14
2.1.3. Model Comparison Table ..... 2 − 15
2.2. System Overview ..... 2 − 16
2.2.1. Front View ..... 2 − 16
2.2.2. Rear View ..... 2 − 17
2.2.3. Paper Path ..... 2 − 18
2.2.4. System Layout ..... 2 − 19
2.2.4.1. Feeding Section ..... 2 − 20
2.2.4.2. Transfer Roller ..... 2 − 21
2.2.4.3. Drive Unit ..... 2 − 21
2.2.4.4. Fuser Unit ..... 2 − 22
2.2.4.5. LSU (Laser Scanner Unit) ..... 2 − 23
2.2.4.6. Toner Cartridge ..... 2 − 24
2.2.5. Hardware configuration ..... 2 − 25
2.2.5.1. Main board ..... 2 − 27

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2.2.5.2. 4 Line OPE Controller (CLX-4195N_4195FN) ..... 2 − 29
2.2.5.3. GUI OPE Controller (CLX-4195FW) ..... 2 − 31
2.2.5.4. Fax Board ..... 2 − 33
2.2.5.5. Wireless LAN board (CLX-4195FW only) ..... 2 − 34
2.2.5.6. SMPS board ..... 2 − 35
2.2.5.7. HVPS board ..... 2 − 37
2.2.5.8. ITB EEPROM PBA ..... 2 − 38
2.2.5.9. HUB PBA ..... 2 − 38
2.2.5.10. Electrical Parts Location ..... 2 − 39
2.2.6. Engine F/W Control Algorithm ..... 2 − 41
2.2.6.1. Feeding ..... 2 − 41
2.2.6.2. Transfer ..... 2 − 41
2.2.6.3. Fusing ..... 2 − 41
2.2.6.4. LSU ..... 2 − 42
2.2.7. Software Descriptions ..... 2 − 43
2.2.7.1. Software system overview ..... 2 − 43
2.2.7.2. Architecture ..... 2 − 43
2.2.7.3. Data and Control Flow ..... 2 − 44
3. Disassembly and Reassembly ..... 3 − 1
3.1. Precautions when replacing parts ..... 3 − 1
3.1.1. Precautions when assembling and disassembling ..... 3 − 1
3.1.2. Precautions when handling PBA ..... 3 − 1
3.1.3. Releasing Plastic Latches ..... 3 − 2
3.2. Screws used in the printer ..... 3 − 3
3.3. Replacing the maintenance parts ..... 3 − 5
3.3.1. Toner Cartridge ..... 3 − 5
3.3.2. Waste Toner Container ..... 3 − 6
3.3.3. ITB Unit ..... 3 − 7
3.3.4. Fuser Unit ..... 3 − 9
3.3.5. Transfer Roller Assy ..... 3 − 10
3.3.6. Pick up_Forward_Reverse roller ..... 3 − 10
3.4. Replacing the main SVC parts ..... 3 − 11
3.4.1. Cover ..... 3 − 11
3.4.2. ADF Unit ..... 3 − 12
3.4.3. OPE Unit ..... 3 − 13
3.4.4. Platen Unit ..... 3 − 14
3.4.5. Middle Cover ..... 3 − 15
3.4.6. Fax Board ..... 3 − 16
3.4.7. HVPS board ..... 3 − 17
3.4.8. Outer Temperature Sensor ..... 3 − 17

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3.4.9. Waste toner container sensor ... 3 − 18
3.4.10. LSU ... 3 − 18
3.4.11. Main Board ... 3 − 19
3.4.12. SMPS board ... 3 − 19
3.4.13. Feed Drive Unit ... 3 − 20
3.4.14. FRAME-RETARD ... 3 − 21
3.4.15. Main Drive Unit ... 3 − 22
4. Alignment and Troubleshooting ... 4 − 1
4.1. Alignment and Adjustments ... 4 − 1
4.1.1. Control panel ... 4 − 1
4.1.2. Understanding the status LED ... 4 − 4
4.1.3. JAM removal ... 4 − 5
4.1.3.1. Clearing original document jams ... 4 − 5
4.1.3.2. Clearing paper jams ... 4 − 8
4.1.4. Useful menu item for service ... 4 − 12
4.1.5. Periodic Defective Image ... 4 − 14
4.1.6. Useful management tools ... 4 − 15
4.1.6.1. Using Samsung Easy Printer Manager (Windows and Macintosh only) ... 4 − 15
4.1.6.2. Using Samsung Printer Status (Windows only) ... 4 − 17
4.1.6.3. Using SyncThru Web Service (SWS) ... 4 − 18
4.1.7. Updating Firmware ... 4 − 20
4.1.7.1. Update the firmware by using the USB port ... 4 − 20
4.1.7.2. Update the firmware by using the network ... 4 − 21
4.1.8. Tech Mode (Diagnostic Mode) ... 4 − 23
4.1.8.1. Tech Mode (CLX-4195N_4195FN) ... 4 − 23
4.1.8.2. Tech Mode (CLX-4195FW) ... 4 − 28
4.2. Troubleshooting ... 4 − 33
4.2.1. Procedure of checking the symptoms ... 4 − 33
4.2.1.1. Basic Check List ... 4 − 34
4.2.2. Error Code and Troubleshooting ... 4 − 35
4.2.3. Image quality problems ... 4 − 57
4.2.4. Other errors ... 4 − 61
5. System Diagram ... 5 − 1
5.1. Block Diagram ... 5 − 1
5.2. Connection Diagram ... 5 − 2
6. Reference Information ... 6 − 1
6.1. Tool for Troubleshooting ... 6 − 1
6.2. Glossary ... 6 − 2

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1. Precautions

In order to prevent accidents and damages to the equipment please read the precautions listed below carefully before servicing the product and follow them closely.

1.1. Safety warning

1) Only to be serviced by a factory trained service technician.

   High voltages and lasers inside this product are dangerous. This product should only be serviced by a factory trained service technician.

2) Use only Samsung replacement parts.

   There are no user serviceable parts inside the product. Do not make any unauthorized changes or additions to the product as these could cause the product to malfunctions and create an electric shocks or fire hazards.

3) Laser Safety Statement

   The printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR, chapter 1 Subchapter J for Class I(1) laser products, and elsewhere is certified as a Class I laser product conforming to the requirements of IEC 60825-1. Class I laser products are not considered to be hazardous. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance or prescribed service condition.

   - Wavelength: 788 nm (-13/ +12)
   - Beam divergence
     - Paraller: 8 degrees (-2/ +4)
     - Perpendicular: 31 degrees (-6/ +4)
   - Maximum power of energy output: 12 mW

WARNING

Never operate or service the product with the protective cover removed from Laser/Scanner assembly. The reflected beam, although invisible, can damage your eyes.

When using this product, these basic safety precautions should always be followed to reduce risk of fire, electric shock, and personal injury.

CAUTION - CLASS 3B LASER RADIATION WHEN OPEN AVOID EXPOSURE TO THE BEAM.
DANGER - LASER RADIATION AVOID DIRECT EXPOSURE TO BEAM.
DANGER - RADIATIONS INVISIBLES DU LASER EN CAS D'OUVERTURE. EVITER TOUTE EXPOSITION DIRECTE AU FAISCEAU.
VORSICHT - UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
ATTENZIONE - RADIAZIONE LASER INVISIBILE IN CASO DI APERTURA. EVITARE L'ESPOSIZIONE AL FASCIO.
PRECAUCIÓN - RADIACIÓN LASER INVISIBLE CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.
PERIGO - RADIAÇÃO LASER INVISÍVEL AO ABRIR. EVITE EXPOSIÇÃO DIRECTA AO FEIXE.
GEVAAR - ONZICHTBARE LASERSTRALEN BIJ GEOPENDE KLEP. DEZE KLEP NIET OPENEN.
ADVARSEL - USYNLIG LASERSTRÅLNING VED ÅBNING. UNDGÅ UDSAETTELSE FOR STRÅLNING.
ADVARSEL. - USYNLIG LASERSTRÅLNING NÅR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPEN. STRÅLEN ÄR FARLIG.
VAROITUS - NÄKYMÄTÖNTÄ LASERSÄTEILYÄ AVATTAESSA. VARO SUORAA ALTISTUMISTA SÄTEELLE.
注 意 - 严禁揭开此盖, 以免激光泄露灼伤
주 의 - 이 덮개를 열면 레이저광에 노출될 수 있으므로 주의하십시오.

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1.2. Caution for safety

1.2.1. Toxic material

This product contains toxic materials that could cause illness if ingested.

1) Please keep imaging unit and toner cartridge away from children. The toner powder contained in the imaging unit and toner cartridge may be harmful, and if swallowed, you should contact a doctor.

1.2.2. Electric shock and fire safety precautions

Failure to follow the following instructions could cause electric shock or potentially cause a fire.

1) Use only the correct voltage, failure to do so could damage the product and potentially cause a fire or electric shock.

2) Use only the power cable supplied with the product. Use of an incorrectly specified cable could cause the cable to overheat and potentially cause a fire.

3) Do not overload the power socket, this could lead to overheating of the cables inside the wall and could lead to a fire.

4) Do not allow water or other liquids to spill into the product, this can cause electric shock. Do not allow paper clips, pins or other foreign objects to fall into the product, these could cause a short circuit leading to an electric shock or fire hazard.

5) Never touch the plugs on either end of the power cable with wet hands, this can cause electric shock. When servicing the product, remove the power plug from the wall socket.

6) Use caution when inserting or removing the power cord. When removing the power cord, grip it firmly and pull. The power cord must be inserted completely, otherwise a poor contact could cause overheating leading to a fire.

7) Take care of the power cable. Do not allow it to become twisted, bent sharply around corners or power cable may be damaged. Do not place objects on top of the power cable. If the power cable is damaged it could overheat and cause a fire. Exposed cables could cause an electric shock. Replace the damaged power cable immediately, do not reuse or repair the damaged cable. Some chemicals can attack the coating on the power cable, weakening the cover or exposing cables causing fire and shock risks.

8) Ensure that the power sockets and plugs are not cracked or broken in any way. Any such defects should be repaired immediately. Take care not to cut or damage the power cable or plugs when moving the machine.

9) Use caution during thunder or lightning storms. Samsung recommends that this machine be disconnected from the power source when such weather conditions are expected. Do not touch the machine or the power cord if it is still connected to the wall socket in these weather conditions.

10) Avoid damp or dusty areas, install the product in a clean well ventilated location. Do not position the machine near a humidifier or in front of an air conditioner. Moisture and dust built up inside the machine can lead to overheating and cause a fire or cause parts to rust.

11) Do not position the product in direct sunlight. This will cause the temperature inside the product to rise possibly leading to the product failing to work properly and in extreme conditions could lead to a fire.

12) Do not insert any metal objects into the machine through the ventilator fan or other part of the casing, it could make contact with a high voltage conductor inside the machine and cause an electric shock.

13) When replacing the SMPS board, please wait 5 minutes after unplugging the power cord, then replace it. You can get a shock by the electric discharge.

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1.2.3. Handling precautions

The following instructions are for your own personal safety to avoid injury and so as not to damage the product.

1) Ensure the product is installed on a level surface, capable of supporting its weight. Failure to do so could cause the product to tip or fall.

2) The product contains many rollers, gears and fans. Take great care to ensure that you do not catch your fingers, hair or clothing in any of these rotating devices.

3) Do not place any small metal objects, containers of water, chemicals or other liquids close to the product which if spilled could get into the machine and cause damage or a shock or fire hazard.

4) Do not install the machine in areas with high dust or moisture levels, beside on open window or close to a humidifier or heater. Damage could be caused to the product in such areas.

5) Do not place candles, burning cigarettes, etc on the product, These could cause a fire.

6) Ensure that the machine is installed and used in proper area to meet the temperature and humidity specifications.

   - If the machine is stored at below zero Celsius for a long time, do not use the machine instantly after movement. It can malfunction. Take care of the machine storage. If the machine is stored at below zero Celsius for a long time, keep the machine at room temperature and install it.

1.2.4. Assembly and Disassembly precautions

1) Replace parts carefully and always use Samsung parts. Take care to note the exact location of parts and also cable routing before dismantling any part of the machine. Ensure all parts and cables are replaced correctly. Please carry out the following procedures before dismantling the product or replacing any parts.

2) Ensure that power is disconnected before servicing or replacing any electrical parts.

3) Disconnect interface cables and power cables.

4) Only use approved spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct.

5) When removing or re-fitting any parts do not use excessive force, especially when fitting screws into plastic.

6) Take care not to drop any small parts into the machine.

7) Handling of the OPC Drum

   - The OPC Drum can be irreparably damaged if it exposed to light. Take care not to expose the OPC Drum either to direct sunlight or to fluorescent or incandescent room lighting. Exposure for as little as 5 minutes can damage the surface of the photoconductive properties and will result in print quality degradation. Take extra care when servicing the product. Remove the OPC Drum and store it in a black bag or other lightproof container. Take care when working with the Covers (especially the top cover) open as light is admitted to the OPC area and can damage the OPC Drum.

   - Take care not to scratch the green surface of OPC Drum Unit. If the green surface of the Drum Cartridge is scratched or touched the print quality will be compromised.

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1.2.5. Disregarding this warning may cause bodily injury

1) Be careful with the high temperature part.

   The fuser unit works at a high temperature. Use caution when working on the printer. Wait for the fuser unit to cool down before disassembly.

2) Do not put fingers or hair into the rotating parts.

   When operating a printer, do not put hand or hair into the rotating parts (Paper feeding entrance, motor, fan, etc.). If do, you can get harm.

3) When you move the printer, use safe lifting and handling techniques.

   This printer is heavy. Use the lifting handles located on each side of the machine. Back injury could be caused if you do not lift carefully.

4) Ensure the printer is installed safely.

   Ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall possibly causing personal injury or damaging the printer.

5) Do not install the printer on a sloping or unstable surface. After installation, double check that the printer is stable.

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1.3. ESD precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called "Electrostatically Sensitive (ES) Devices" or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor "chip" components. The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

CAUTION

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1) Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, which should be removed for your personal safety reasons prior to applying power to the unit under test.

2) After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.

3) Use only a grounded tip soldering iron to solder or desolder ESDs.

4) Use only an "anti-static" solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.

5) Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.

6) Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.

7) Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

8) Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.

9) Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one's foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

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2. Product specification and description

2.1. Product Specification

2.1.1. Product Overview

1) **Printing Speed**
   - 18 (Color)/ 18 (Mono) ppm in A4 (19/19 ppm in Letter)
2) **Processor**
   - 533 MHz
3) **Printer Language**
   - SPLC, PCL5Ce, PCL6C, PS3, PDF V1.7
4) **Memory**
   - 256MB (Standard) / 512MB (Max)
5) **Interface**
   - High Speed USB 2.0
   - 10/100/1000 BaseTX network connector
   - 802.11b/g/n wireless LAN (CLX-4195FW only)
   - LCD :
     - CLX-4195N/ FN : 4 Lines LCD
     - CLX-4195FW : 4.3 inch Touch LCD
6) **Toner cartridge**
   - Initial : 1K (K)/ 0.7K (CMY)
   - Sales: 2.5K (K)/ 1.8K (CMY)

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2.1.2. Specifications

NOTE

Product Specifications are subject to change without notice.

2.1.2.1. General Print Engine

Item		CLX-4195N	CLX-4195FN / 4195FW
Engine Speed	Simplex (C/M)	Up to 18/18 ppm in A4 (19/19 ppm in Letter)	Up to 18/18 ppm in A4 (19/19 ppm in Letter)
	Duplex	N/A	N/A
FPOT	From Ready (C/M)	As fast as 16/16 sec	As fast as 16/16 sec
	From Sleep (C/M)	As fast as 32/32 sec	As fast as 32/32 sec
Resolution	Optical	600 x 600 dpi	600 x 600 dpi
	Enhanced	Up to 9,600 x 600 effective output	Up to 9,600 x 600 effective output

2.1.2.2. Copy

Item		CLX-4195N	CLX-4195FN / 4195FW
Copy Speed	Simplex	• SDMC: up to 18 cpm in A4 (19 cpm in Letter) • MDSC: up to 18 cpm in A4 (19 cpm in Letter)	• SDMC: up to 18 cpm in A4 (19 cpm in Letter) • MDSC: up to 18 cpm in A4 (19 cpm in Letter)
	Duplex	N/A	N/A
FCOT	From Ready	• Less than 16 seconds : Platen • Less than 19 seconds : ADF	• Less than 16 seconds : Platen • Less than 19 seconds : ADF
Original Type (Mono)	Text	• Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 600 x 600 dpi	• Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 600 x 600 dpi
	Text/Photo	• Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 600 x 600 dpi	• Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 600 x 600 dpi
	Photo	• Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 1,200 x 1,200 dpi	• Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 1,200 x 1,200 dpi

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Item		CLX-4195N	CLX-4195FN / 4195FW
Original Type (Color)	Text	• Scan : 600 x 600 dpi (Optical 300 x 300 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 400 dpi) @ Platen, Printing : 600 x 600 dpi	• Scan : 600 x 600 dpi (Optical 300 x 300 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 400 dpi) @ Platen, Printing : 600 x 600 dpi
	Text/Photo	• Scan : 600 x 600 dpi (Optical 300 x 300 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 400 dpi) @ Platen, Printing : 600 x 600 dpi	• Scan : 600 x 600 dpi (Optical 300 x 300 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 400 dpi) @ Platen, Printing : 600 x 600 dpi
	Photo	• Scan : 600 x 600 dpi (Optical 300 x 300 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 1,200 x 1,200 dpi	• Scan : 600 x 600 dpi (Optical 300 x 300 dpi) @ ADF, Printing : 600 x 600 dpi • Scan : 600 x 600 dpi (Optical 600 x 600 dpi) @ Platen, Printing : 1,200 x 1,200 dpi
Original Type	Factory Default	Text/Photo	Text/Photo
Max. Original Size	Platen	A4	A4
	ADF	Legal (8.5" x 14")	Legal (8.5" x 14")
Basic Copy	Multi Copy	1~99	1~99
	Automatic Paper Selection	Yes - Patially	Yes - Patially
	Manual Paper Selection	Yes	Yes
	Duplex Copy	No	No
	Darkness Control	11 levels	11 levels
	Reduce & Enlarge	* Zoom Range : 25% to 400% in Platen 25% to 100% in ADF * Preset [Original(100%)] [Auto Fit] [A4 → A5(71%)] [LGL→LTR(78%)] [LGL→A4(83%)] [A4→LTR(94%)] [EN/AE→LTR(104%)] [A5 → A4(141%)] 25%, 50%,150%, 200%, 400% [Custom:25-400%)]	* Zoom Range : 25% to 400% in Platen 25% to 100% in ADF * Preset [Original(100%)] [Auto Fit] [A4 → A5(71%)] [LGL→LTR(78%)] [LGL→A4(83%)] [A4→LTR(94%)] [EN/AE→LTR(104%)] [A5 → A4(141%)] 25%, 50%,150%, 200%, 400% [Custom:25-400%)]
	Output	• Not Collated • Collated	• Not Collated • Collated

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Item		CLX-4195N	CLX-4195FN / 4195FW
Other Features	N-Up	2up, 4-up	2up, 4-up
	ID Card Copy	Yes (Platen only)	Yes (Platen only)
	Poster Copy	No	No
	Clone Copy	No	No
	Booklet	No	No
	Covers	No	No
	Transparencies	No	No
	Book Copy	No	No
	Save to File	No	No

2.1.2.3. Scan

Item		CLX-4195N	CLX-4195FN/ 4195FW
Scan method		COLOR CIS	COLOR CIS
Compatibility		TWAIN, WIA	TWAIN, WIA
Color Mode		Mono / Gray / Color	Mono / Gray / Color
Scan Speed	Lineart, Halftone (mono)	15 sec @ 300 dpi	15 sec @ 300 dpi
	Gray (mono)	20 sec @ 300 dpi	20 sec @ 300 dpi
	Color	30 sec @ 300 dpi	30 sec @ 300 dpi
Resolution	Optical	1200 x 1200 dpi	1200 x 1200 dpi
	Enhanced	4,800 x 4,800 dpi	4,800 x 4,800 dpi
Halftone		256 levels	256 levels
Scan Size	Max. Document Width	Max. 216 mm (8.5")	Max. 216 mm (8.5")
	Effective Scan Width	Max. 208 mm (8.2")	Max. 208 mm (8.2")
	Max. Document Length	• Max. 297 mm(11.7") @platen • Max. 356 mm(14") @ ADF	• Max. 297 mm(11.7") @platen • Max. 356 mm(14") @ ADF
	Effective Scan Length	• Max 289 mm @platen • Max 348 mm @ADF	• Max 289 mm @platen • Max 348 mm @ADF
Scan Depth	Color	24 bits	24 bits
	Mono	• 1 bit for Lineart & Halftone • 8 Bits for Gray scale	• 1 bit for Lineart & Halftone • 8 Bits for Gray scale
Scan-to	HDD	No	No
	USB	Yes	Yes
	Email	Yes	Yes
	Client(NetScan)	No	No
	SMB	No	No
	FTP	No	No
	HTTP(S)	No	No

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2.1.2.4. Fax

Item		CLX-4195N	CLX-4195FN / 4195FW
Compatibility		N/A	ITU-T G3
Communication System		N/A	PSTN/PABX
Modem Speed		N/A	33.6Kbps
Tx Speed		N/A	Approx. 3 sec (Mono/ Standard/ ECM-MMR/ MemoryTx, ITU-T G3 No.1 chart)
Compression		N/A	MH/MR/MMR/JBIG/JPEG
Color Fax		N/A	Yes
ECM		N/A	Yes
Resolution (Mono)	Std	N/A	203 x 98 dpi
	Fine	N/A	203 x 196 dpi
	S.Fine	N/A	300 x 300 dpi
Resolution (Color)	Std	N/A	No
	Fine	N/A	200 x 200dpi
	S.Fine	N/A	No
Telephone Features	Handset	N/A	No
	On hook Dial	N/A	Yes
	Search	N/A	Yes (Address Book)
	Speed Dial	N/A	200 locations
	Group Dial	N/A	100 locations
	TAD I/F	N/A	No
	Tone/Pulse	N/A	Yes (Selectable in Tech Mode)
	Pause	N/A	Yes
	Auto Redial	N/A	Yes
	Multi Redial	N/A	Yes
	Caller ID	N/A	Yes
	External Phone Interface	N/A	Yes
Functions	Mail Box	N/A	No
	Voice Request	N/A	No
	TTI	N/A	Yes
	RTI	N/A	Yes
	Polling	N/A	No
	Earth/Recall	N/A	No
	Auto Reduction	N/A	Yes
	SMS	N/A	No
	Multi-send	N/A	Yes
	Delayed Send	N/A	Yes
	Memory Rx	N/A	Yes

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Item		CLX-4195N	CLX-4195FN / 4195FW
	Relay Transmission (ITU-T Mail Box)	N/A	No
	Priority Transmission	N/A	No
	Batch Transmission	N/A	No
Report & List Print out	Tx/Rx Journal	N/A	Yes
	Confirmation	N/A	2 types available (with Image TCR, w/o image TCR, Mono Only)
	Auto Dial List	N/A	Yes
	System Data List	N/A	Yes
Sound Control	Ring Volume	N/A	Yes (Off,On, 7 levels)
	Key Volume	N/A	Yes (On,Off)
	Speaker	N/A	Yes (On,Off,Comm, 7 levels)
	Alarm Volume	N/A	Yes (On,Off)
Junk Fax barrier		N/A	No
Security Receive		N/A	Yes
Battery Backup (Hours)		N/A	No
Duplex	Send	N/A	No
	Receive	N/A	No
Receive Mode		N/A	Fax, TEL, Ans/Fax
Fax Memory		N/A	6MB
Fax Forward to FAX		N/A	Yes(On/Off), both Send and Receive
Fax Forward to e-mail		N/A	No
Broadcasting		N/A	up to 208 locations
Cover page		N/A	Yes(PC Fax Only)
Time Secured Fax		N/A	Yes
Fax-to	HDD	N/A	No
	USB	N/A	No
	Fax	N/A	Yes
	Email	N/A	No
	Client	N/A	No
	SMB	N/A	No
	FTP	N/A	No
	HTTP(S)	N/A	No

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2.1.2.5. Controller and Software

Item		CLX-4195N	CLX-4195FN / 4195FW
Processor		Samsung 533MHz	Samsung 533MHz
Memory	Std.	256 MB	256 MB
	Max.	512 MB	512 MB
Printer Languages		SPLC, PCL5Ce, PCL6C, PS3, PDF V1.7	SPLC, PCL5Ce, PCL6C, PS3, PDF V1.7
Fonts		• PCL : 95 Scalable Fonts (include OCR-A, OCR-B), 1 bitmap • PS : 136 Scalable Fonts	• PCL : 95 Scalable Fonts (include OCR-A, OCR-B), 1 bitmap • PS : 136 Scalable Fonts
Driver	Default Driver	SPL	SPL
	Supporting OS	[WINDOW] • XP(32/64bit)/ 2003 Server(32/64bit)/ Vista(32/64bit)/ 2008 Server(32/64bit)/ 7(32/64bit)/ 2008 Server R2	[WINDOW] • XP(32/64bit)/ 2003 Server(32/64bit)/ Vista(32/64bit)/ 2008 Server(32/64bit)/ 7(32/64bit)/ 2008 Server R2
		[Linux] • RedHat Enterprise Linux WS 4, 5 (32/64 bit) • Fedora 5, 6, 7, 8, 9, 10, 11, 12, 13 (32/64 bit) • SuSE Linux 10.1 (32 bit) • OpenSuSE 10.2, 10.3, 11.0, 11.1, 11.2 (32/64 bit) • Mandriva 2007, 2008, 2009, 2009.1, 2010 (32/64 bit) • Ubuntu 6.06, 6.10, 7.04, 7.10, 8.04, 8.10, 9.04, 9.10, 10.04 (32/64 bit) • SuSE Linux Enterprise Desktop 10, 11 (32/64 bit) • Debian 4.0, 5.0 (32/64 bit)	[Linux] • RedHat Enterprise Linux WS 4, 5 (32/64 bit) • Fedora 5, 6, 7, 8, 9, 10, 11, 12, 13 (32/64 bit) • SuSE Linux 10.1 (32 bit) • OpenSuSE 10.2, 10.3, 11.0, 11.1, 11.2 (32/64 bit) • Mandriva 2007, 2008, 2009, 2009.1, 2010 (32/64 bit) • Ubuntu 6.06, 6.10, 7.04, 7.10, 8.04, 8.10, 9.04, 9.10, 10.04 (32/64 bit) • SuSE Linux Enterprise Desktop 10, 11 (32/64 bit) • Debian 4.0, 5.0 (32/64 bit)
		Mac OS X 10.4~10.7	Mac OS X 10.4~10.7
		[UNIX] • Sun Solaris 9,10 (x86, SPARC) • HP-UX 11.0, 11i v1, 11i v2, 11i v3 (PA-RISC, Itanium) • IBM AI 5.1, 5.2, 5.3, 5.4	[UNIX] • Sun Solaris 9,10 (x86, SPARC) • HP-UX 11.0, 11i v1, 11i v2, 11i v3 (PA-RISC, Itanium) • IBM AI 5.1, 5.2, 5.3, 5.4

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Item		CLX-4195N	CLX-4195FN / 4195FW
	WHQL	• SPL/PCL6/PS driver : Windows 2003(32bit), Windows 2003(64bit), Windows Vista(32bit), Windows Vista(64bit), Windows 7(32bit), Windows 7(64bit), XP(32/64bit) • XPS driver : Windows Vista(32bit), Windows Vista(64bit), Windwos 7(32bit), Windows 7(64bit)	• SPL/PCL6/PS driver : Windows 2003(32bit), Windows 2003(64bit), Windows Vista(32bit), Windows Vista(64bit), Windows 7(32bit), Windows 7(64bit), XP(32/64bit) • XPS driver : Windows Vista(32bit), Windows Vista(64bit), Windwos 7(32bit), Windows 7(64bit)
Wired Network	Protocol	[TCP/IP] • TCP/IPv4/IPv6, HTTP, SNMPv1/v2c/v3, SMTP, IPSec, DNS/WINS, DDNS, DHCP, SSL/TLS, BOOTP, AutoIP, Standard TCP/IP printing, LPR, IPP, UPnP(SSDP), Bonjour, Telnet, WSD, SLP, SetIP, AirPrint, ThinPrint [Others] • HTTPs,IPPs, 802.1x (EAP-MD5, EAP-MSCHAPv2, PEAP, TLS), IPSec	[TCP/IP] • TCP/IPv4/IPv6, HTTP, SNMPv1/v2c/v3, SMTP, IPSec, DNS/WINS, DDNS, DHCP, SSL/TLS, BOOTP, AutoIP, Standard TCP/IP printing, LPR, IPP,UPnP(SSDP),Bonjour, Telnet, WSD, SLP, SetIP, AirPrint, ThinPrint, SNTP [Others] • HTTPs,IPPs, 802.1x(EAP-MD5, EAP-MSCHAPv2, PEAP, TLS), IPSec

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Item		CLX-4195N	CLX-4195FN / 4195FW
	Supporting OS	[Windows] • Microsoft Windows XP(32/64bits)/ 2003 Server(32/64bits)/ Vista(32/64bits)/ 2008 Server(32/64bit)/ 7/ 2008 Server R2/ 7/ 2008R2 [Mac] • Mac OS 10.4~10.7 [Linux] • RedHat 8 ~ 9(32bit)/ Enterprise Linux WS 4, 5(32/64bit) • Fedora Core 1 ~ 7 (32/64bit) • SuSE 8.2 ~ 10.2/ Enterprise Desktop 9~10 (32/64bit) • Madrake 9.2 ~ 10.1 (32/64bit) • Mandriva 2005 ~ 2007 • Ubuntu 6.06 ~ 7.04 • Debian 3.1 ~ 4.0 [Novell] • Netware 5.x, 6.x (TCP/IP Only) [Others] • Unix Sun Solaris 8,9,10(SPARC/86) IBM AIx 5.x (6.1) IBM Linux (System P) HP-U 11i (PA-RISC/IA-64) (11.11/11.20/11.22/11.23/11.31)	[Windows] • Microsoft Windows XP(32/64bits)/ 2003 Server(32/64bits)/ Vista(32/64bits)/ 2008 Server(32/64bit)/ 7/ 2008 Server R2/ 7/ 2008R2 [Mac] • Mac OS 10.4~10.7 [Linux] • RedHat 8 ~ 9(32bit)/ Enterprise Linux WS 4, 5(32/64bit) • Fedora Core 1 ~ 7 (32/64bit) • SuSE 8.2 ~ 10.2/ Enterprise Desktop 9~10 (32/64bit) • Madrake 9.2 ~ 10.1 (32/64bit) • Mandriva 2005 ~ 2007 • Ubuntu 6.06 ~ 7.04 • Debian 3.1 ~ 4.0 [Novell] • Netware 5.x, 6.x (TCP/IP Only) [Others] • Unix Sun Solaris 8,9,10(SPARC/86) IBM AIx 5.x (6.1) IBM Linux (System P) HP-U 11i (PA-RISC/IA-64) (11.11/11.20/11.22/11.23/11.31)
Application	Anyweb Print	NO	NO
	Smart Panel	Windows Only (Lite SM)	Windows Only (Lite SM)
	Installer	YES	YES
	Easy Printer Manager	YES	YES
	Easy Color Manager	YES	YES
	Easy Document Creator	YES	YES
	Net PC Fax	NO	YES
	Direct Printing Utility	YES	YES
	Easy Deployment Manager	YES	YES
	Network Management	Set IP, SWAS 5.0 & SWS 2.0, CounThru 2.5 SWAS Plug-In - Job Accounting, Driver Management Plug-in, Device Map Plug-in	Set IP, SWAS 5.0 & SWS 2.0, CounThru 2.5 SWAS Plug-In - Job Accounting, Driver Management Plug-in, Device Map Plug-in

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■ Interface

Item		CLX-4195N	CLX-4195FN / 4195FW
Parallel	Option Interface	N/A	N/A
USB	High Speed USB 2.0	Device 1 Port, Host 1 Port	Device 1 Port, Host 1 Port
Wired Network		10/100/1000 Base TX	10/100/1000 Base TX
Wireless Network		N/A	• 4195FN : N/A • 4195FW : 802.11b/g/n
User Interface	LCD	4 Lines Graphic	• 4195FN : 4 Lines Graphic • 4195FW : 4.3 inch Graphic
	LED	4 (ECO, POWER, NAVI, STATUS)	• 4195FN : 5 (ECO, POWER, NAVI, STATUS, Scan To) • 4195FW : 3 (POWER, STATUS, Wireless)

2.1.2.6. Paper Handling

Item		CLX-4195N	CLX-4195FN / 4195FW
Standard Capacity		• 250-sheet Cassette Tray@80g/m² • 1-sheet Manual Tray	• 250-sheet Cassette Tray@80g/m² • 1-sheet Manual Tray
Max. Capacity		251 sheets @80g/m²	251 sheets @80g/m²
Printing	Max. Size	216 x 356 mm (8.5" x 14")	216 x 356 mm (8.5" x 14")
	Min. Size	76 x 127 mm (3.0" x 5.0")	76 x 127 mm (3.0" x 5.0")
Multi-purpose tray	Capacity	• Plain Paper : 1 sheet @80g/m² • Transparency : 1 sheet • Label : 1 sheet • Envelope : 1 sheet	• Plain Paper : 1 sheet @80g/m² • Transparency : 1 sheet • Label : 1 sheet • Envelope : 1 sheet
	Media sizes	A4, Letter, Legal, Oficio, Folio, JIS B5, ISO B5, Executive, A5, Statement, A6, Index Card Stock, Postcard, Envelope Monarch, Envelope No-10, Envelope DL, Envelope C5, Envelope C6, Envelope No 9, Custom [76 x 127mm (3.0" x 5.0") ~ 216 x 356mm (8.5" x 14")]	A4, Letter, Legal, Oficio, Folio, JIS B5, ISO B5, Executive, A5, Statement, A6, Index Card Stock, Postcard, Envelope Monarch, Envelope No-10, Envelope DL, Envelope C5, Envelope C6, Envelope No 9, Custom [76 x 127mm (3.0" x 5.0") ~ 216 x 356mm (8.5" x 14")]
	Media type	Plain Paper, Thin Paper, Thick Paper, Cardstock, Thicker Paper, Hole Punched, Transparency, Pre-Printed, LetterHead, Recycled, Archive, Bond, Label, Envelope, Cotton, Colored, Glossy	Plain Paper, Thin Paper, Thick Paper, Cardstock, Thicker Paper, Hole Punched, Transparency, Pre-Printed, LetterHead, Recycled, Archive, Bond, Label, Envelope, Cotton, Colored, Glossy

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Item		CLX-4195N	CLX-4195FN / 4195FW
	Media weight	• Supported Weight : 60 ~ 220gsm • Thin Paper : 60~69g/m² • Plain Paper : 70~89g/m² • Thick Paper : 90~120g/m² • Cardstock : 121~163g/m² • Thicker Paper : 164~220g/m² • Thick paper : 90~104g/m² • Bond Paper: 105~120g/m²	• Supported Weight : 60 ~ 220gsm • Thin Paper : 60~69g/m² • Plain Paper : 70~89g/m² • Thick Paper : 90~120g/m² • Cardstock : 121~163g/m² • Thicker Paper : 164~220g/m² • Thick paper : 90~104g/m² • Bond Paper: 105~120g/m²
	Sensing	Paper Empty : no	Paper Empty : no
Standard Cassette Tray	Capacity	• 250 sheets @80g/m² • Envelope 20 sheets	• 250 sheets @80g/m² • Envelope 20 sheets
	Media sizes	A4, Letter, Legal, Oficio, Folio, JIS B5, ISO B5, Executive, A5, Statement, A6, Postcard, Envelope Monarch, Envelope No-10, Envelope DL, Envelope C5, Envelope C6, Envelope No 9, Custom[98 x 127mm (3.86" x 5.00") ~ 216 x 356mm (8.5" x 14")]	A4, Letter, Legal, Oficio, Folio, JIS B5, ISO B5, Executive, A5, Statement, A6, Postcard, Envelope Monarch, Envelope No-10, Envelope DL, Envelope C5, Envelope C6, Envelope No 9, Custom[98 x 127mm (3.86" x 5.00") ~ 216 x 356mm (8.5" x 14")]
	Media types	Plain Paper, Thin Paper, Thick Paper, Cardstock, Thicker Paper, Hole Punched, Transparency, Pre-Printed, LetterHead, Recycled, Archive, Bond, Label, Envelope, Cotton, Colored, Glossy	Plain Paper, Thin Paper, Thick Paper, Cardstock, Thicker Paper, Hole Punched, Transparency, Pre-Printed, LetterHead, Recycled, Archive, Bond, Label, Envelope, Cotton, Colored, Glossy
	Media weight	• Supported Weight : 60 ~ 220gsm • Thin Paper : 60~69g/m² • Plain Paper : 70~89g/m² • Thick Paper : 90~120g/m² • Cardstock : 121~163g/m² • Thicker Paper : 164~220g/m² • Thick paper : 90~104g/m² • Bond Paper: 105~120g/m²	• Supported Weight : 60 ~ 220gsm • Thin Paper : 60~69g/m² • Plain Paper : 70~89g/m² • Thick Paper : 90~120g/m² • Cardstock : 121~163g/m² • Thicker Paper : 164~220g/m² • Thick paper : 90~104g/m² • Bond Paper: 105~120g/m²
	Sensing	• H/W Install Detect: No • Paper Empty : Yes • Paper Type Detect: No • Paper Size Detect: No	• H/W Install Detect: No • Paper Empty : Yes • Paper Type Detect: No • Paper Size Detect: No
Option Cassette (SCF)		N/A	N/A
Output Stacking	Capacity (Face-Down)	100 sheets @80g/m²	100 sheets @80g/m²
	Output Full sensing	Paper full Sensor	Paper full Sensor

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Item		CLX-4195N	CLX-4195FN / 4195FW
ADF	Capacity	50 sheet @80g/m²	50 sheet @80g/m²
	2-sided Document Scanning	No	No
	Document Weight	12.5~28lb	12.5~28lb
	Document Size	• Width: 142 ~ 216 mm (5.6" ~ 8.5") • Length : 148 ~ 356 mm (5.8" ~ 14.0")	• Width: 142 ~ 216 mm (5.6" ~ 8.5") • Length : 148 ~ 356 mm (5.8" ~ 14.0")
Duplex		N/A	N/A
Non-Printable Area	Other Media	• Top & Bottom: 4.23 mm (0.2") from edge • Left & Right: 3 mm (0.11") from edge	• Top & Bottom: 4.23 mm (0.2") from edge • Left & Right: 3 mm (0.11") from edge
	Envelope	• Top & Bottom: 10 mm (0.4") from edge • Left & Right: 10 mm (0.4") from edge	• Top & Bottom: 10 mm (0.4") from edge • Left & Right: 10 mm (0.4") from edge

2.1.2.7. Reliability and Service

Item	CLX-4195N	CLX-4195FN / 4195FW
Printing Volume (SET AMPV)	1,600 sheets / month	1,600 sheets / month
Max. Monthly Duty	40,000 sheets	40,000 sheets

2.1.2.8. Environment

Item		CLX-4195N	CLX-4195FN /4195FW
Acoustic Noise Level(Sound Power/Pressure)	Printing	Less than 50 dBA(Sound Pressure)	Less than 50 dBA(Sound Pressure)
	Copying	Less than 52 dBA(Sound Pressure)	Less than 52 dBA(Sound Pressure)
	Standby	Less than 37.0 dBA(Sound Pressure)	Less than 37.0 dBA(Sound Pressure)
	Sleep	Back Ground Level	Back Ground Level
Power Consumption	Ready	Less than 50W	Less than 50W
	AVG.	Less than 380W	Less than 380W
	Max/Peak	Less than 1400W	Less than 1400W
	Power Save	Less than 1.3W	Less than 1.9W
Dimension (W x D x H)	SET	424 x 453 x 457 mm (16.69 x 17.83 x 17.99 inches)	424 x 453 x 457 mm (16.69 x 17.83 x 17.99 inches)
Weight	SET	24 Kg (52.91 Ibs)	24 Kg (52.91 Ibs)

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2.1.2.9. Consumables

Item		CLX-4195N	CLX-4195FN / 4195FW
Toner Cartridge	Model	• CLT-K504S: Black • CLT-Y504S: Yellow • CLT-M504S: Magenta • CLT-C504S: Cyan	• CLT-K504S: Black • CLT-Y504S: Yellow • CLT-M504S: Magenta • CLT-C504S: Cyan
	Yield	• Average continuous black cartridge yield: Apporx. 2,500 standard pages (Black) • Average continuous color cartridge yield: Apporx. 1,800 standard pages (Yellow/Magenta/Cyan) **NOTE** Declared cartridge yield in accordance with ISO/IEC 19798	• Average continuous black cartridge yield: Apporx. 2,500 standard pages (Black) • Average continuous color cartridge yield: Apporx. 1,800 standard pages (Yellow/Magenta/Cyan) **NOTE** Declared cartridge yield in accordance with ISO/IEC 19798
Waste Toner Container	Model	CLT-W504	CLT-W504
	Yield	• Apporx. 14,000 standard pages (Black) • Apporx. 3500 standard pages (Yellow/Magenta/Cyan)	• Apporx. 14,000 standard pages (Black) • Apporx. 3.500 standard pages (Yellow/Magenta/Cyan)

NOTE

Depending on the options, percentage of image area and job mode used, the toner cartridge's lifespan may differ.

2.1.2.10. Maintenance Parts

Item		CLX-4195N	CLX-4195FN / 4195FW
Transfer roller	Part Code	JC95–01637A	JC95–01637A
	Life	100,000 pages	100,000 pages
Fuser unit	Part Code	JC91–01130A (220V) / JC91–01131A (110V)	JC91–01130A (220V) / JC91–01131A (110V)
	Life	50,000 pages	50,000 pages
Pick-Up roller	Part Code	JC93–00673A	JC93–00673A
	Life	200,000 pages	200,000 pages
Reverse (Retard) roller	Part Code	JC93–00675A	JC93–00675A
	Life	100,000 pages	100,000 pages
ITB unit	Part Code	JC96–06514A	JC96–06514A
	Life	100,000 pages	100,000 pages

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2.1.2.11. Option

Item	Model Name	Support		
		CLX-4195N	CLX-4195FN	CLX-4195FW
Memory	ML-MEM370 (512 MB)	Yes	Yes	Yes
Option Cassette (SCF)	-	N/A	N/A	N/A
Wireless network	-	N/A	N/A	Yes (Default)
Hard Disk	-	N/A	N/A	N/A
USB to Parallel Cable	-	N/A	N/A	N/A

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2.1.3. Model Comparison Table

	Samsung CLX-4195FW	Samsung CLX-6260FW	HP CM1415
Image			
Mono/Color Speed (A4)	18 / 18 ppm	24/ 24 ppm	12 /8 ppm
Processor	533 MHz	533 MHz	600 MHz
Memory (Std/ Max)	256 MB / 512 MB	512 MB / 1024 MB	160 MB / 160 MB
Print Language	SPLC, PCL5Ce, PCL6C, PS3, PDF V1.7	SPLC, PCL5Ce, PCL6C, PS3, PDF V1.7	HP PCL 6, HP PCL 5c, HP postscript3
Paper Input	250 sheets Cassette	250 sheets Cassette 520 sheets Optional Cassette	150 sheets Cassette
Duplex	N/A	Standard	N/A
Interface	High Speed USB 2.0 10/100/1000 Base TX Wireless LAN 802.11b/g/n	High Speed USB 2.0 10/100/1000 Base TX Wireless LAN 802.11b/g/n	High Speed USB 2.0 10/100 Base TX
Size (mm)	424 x 453 x 457 mm (16.69 x 17.83 x 17.99 inches)	469 x 453 x 490 mm (18.46 x 17.83 x 19.29 inches)	443 x 472 x 415mm
Toner Cartridge (K/CMY)	2.5K / 1.8K	• 2K / 1.5K • 6K / 3.5K	2K / 1.3K

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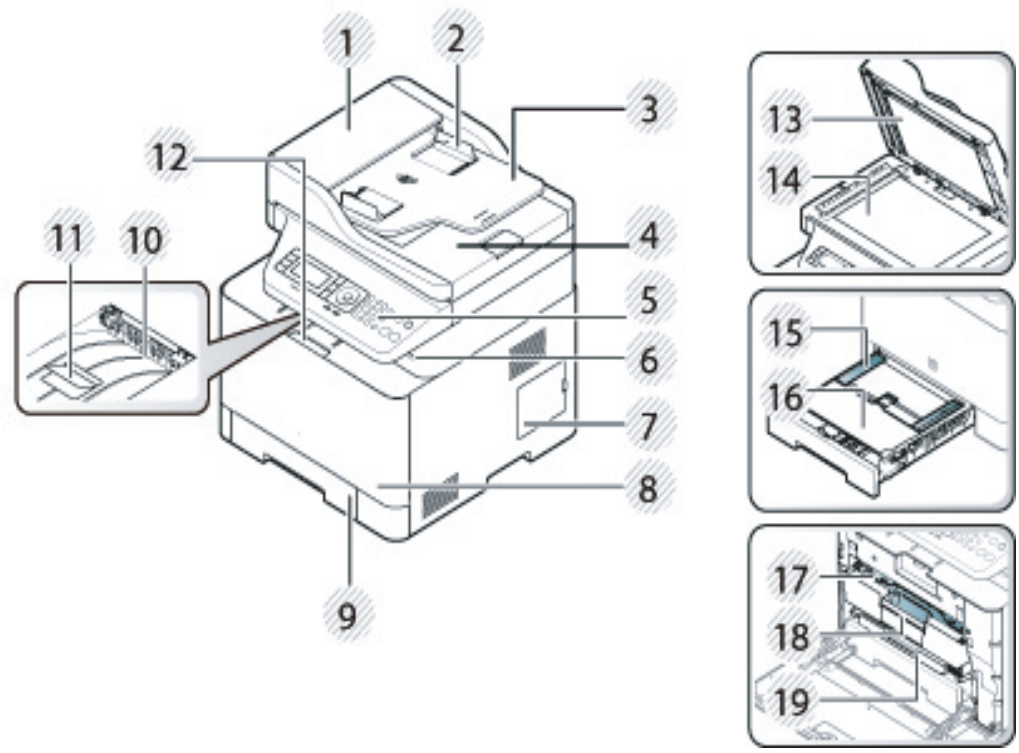
2.2. System Overview

This chapter describes the functions and operating principal of the main component.

2.2.1. Front View

NOTE

- This illustration may differ from your machine depending on your model. There are various types of machine.
- Some features and optional goods may not be available depending on model or country.



1	Document feeder cover
2	Document feeder width guide
3	Document feeder input tray
4	Document feeder output tray
5	Control panel
6	USB memory port
7	Control board cover
8	Front cover
9	Tray 1
10	Output tray

11	Document feeder output support
12	Front cover handle
13	Scanner lid
14	Scanner glass
15	Paper width guides on a manual feeder
16	Manual feeder
17	Toner cartridge
18	Toner cartridge handle
19	Intermediate Transfer Belt (ITB)

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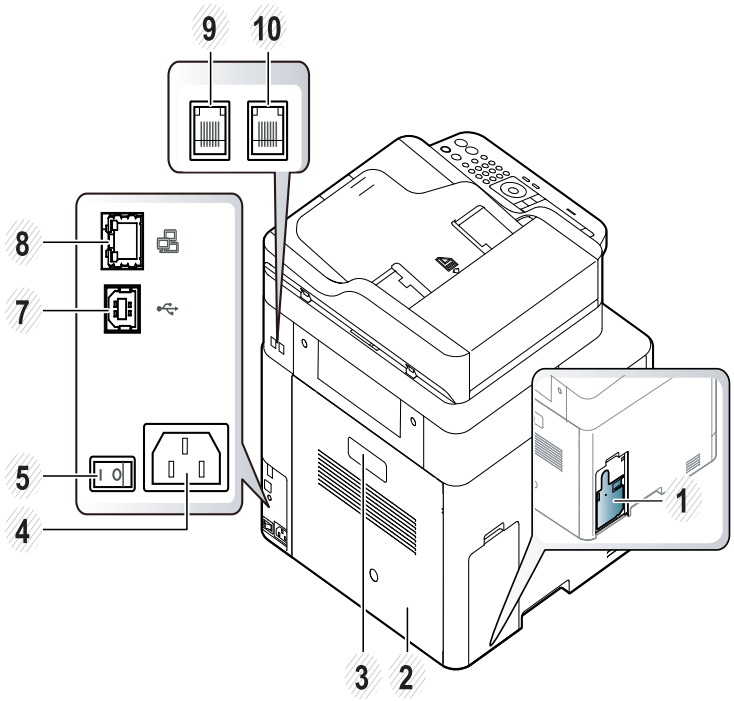
2.2.2. Rear View

NOTE

- This illustration may differ from your machine depending on your model. There are various types of machine.
- Some features and optional goods may not be available depending on model or country.



1	Waster toner container
2	Rear cover
3	Rear cover handle
4	Power receptacle
5	Power-switch

7	USB port
8	Network port
9	Telephone line socket (LINE) *
10	Extension telephone socket (EXT.) *

NOTE

* CLX-419xFN/CLX-419xFW Only

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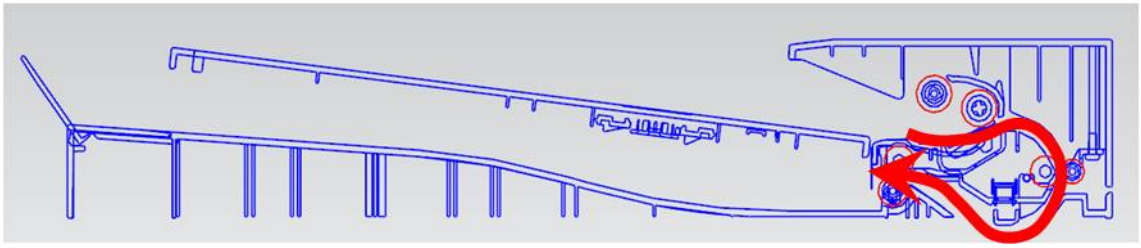
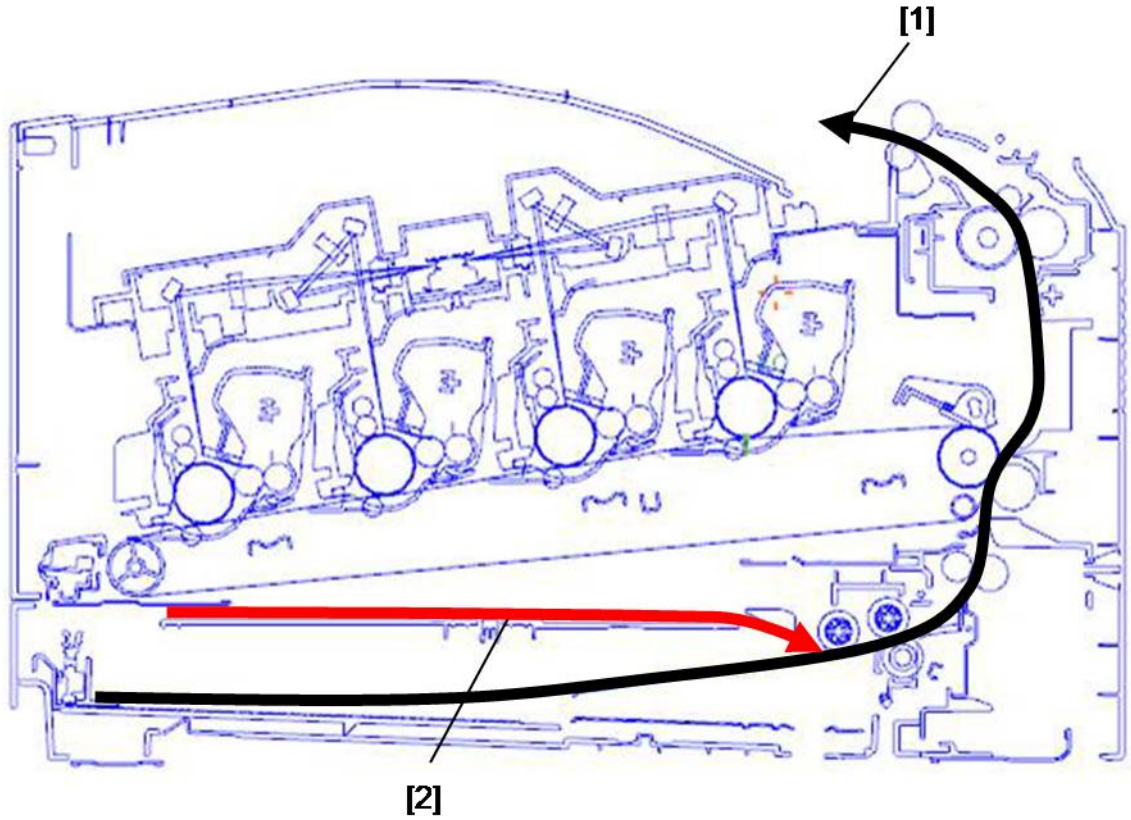
2.2.3. Paper Path

The following diagram displays the path the paper follows during the printing process.

[ADF]



[Engine]



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2.2.4. System Layout

This model consists of the scanner parts, engine parts, hardware parts, firmware. The scanner parts consists of ADF and platen. The engine parts consists of the mechanical parts comprising Frame, Toner Cartridge, Drive Unit, Transfer roller, Pick up unit, Fuser, Cassette. The hardware parts consists of the main board, SMPS, HVPS board, OPE board, PC interface.

1	Exit Unit
2	Fuser Unit
3	Transfer Roller
4	Registration(Regi.) Roller
5	Pick-Up Roller
6	Retard Roller

7	Cassette
8	LSU
9	Toner Cartridge
10	ITB Unit
11	ADF Unit

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2.2.4.1. Feeding Section

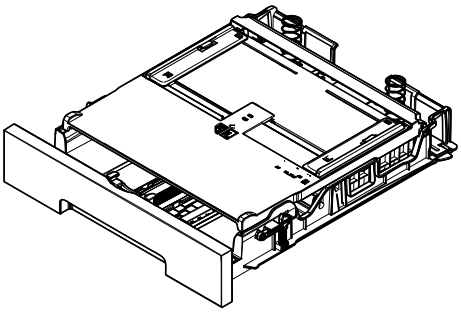
It is consists of a basic cassette, pick up/forward/retard roller and parts related to paper transferring.

1) Cassette (Tray1)

This model has a cassette type tray that includes the MP tray.

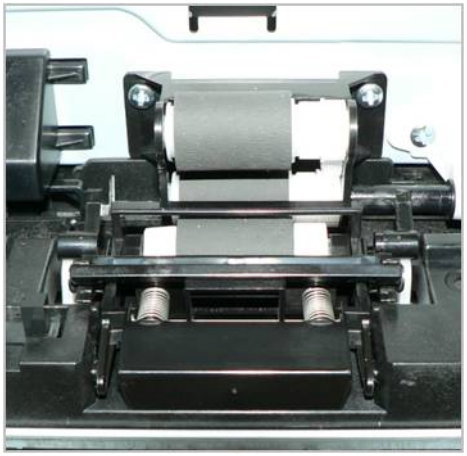
It has a paper existence sensing function, paper arranging function.

The MP(multi-purpose) tray can hold special sizes and types of print material, such as postcards, note cards, and envelopes. It is useful for single page printing on letterhead or colored paper.



2) Pick up/Forward/Reverse roller

They have functions such as a paper pickup function, driving control function, paper feeding function, and removing electronic static function. Pick up roller is driven by clutch.



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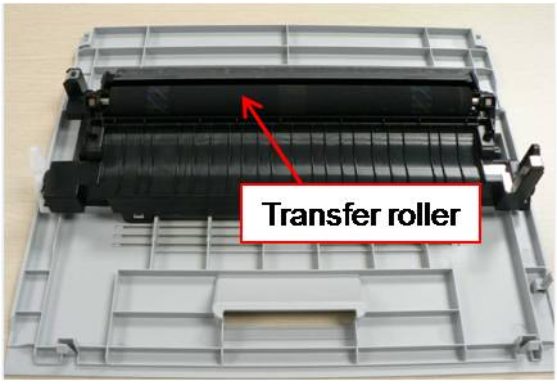
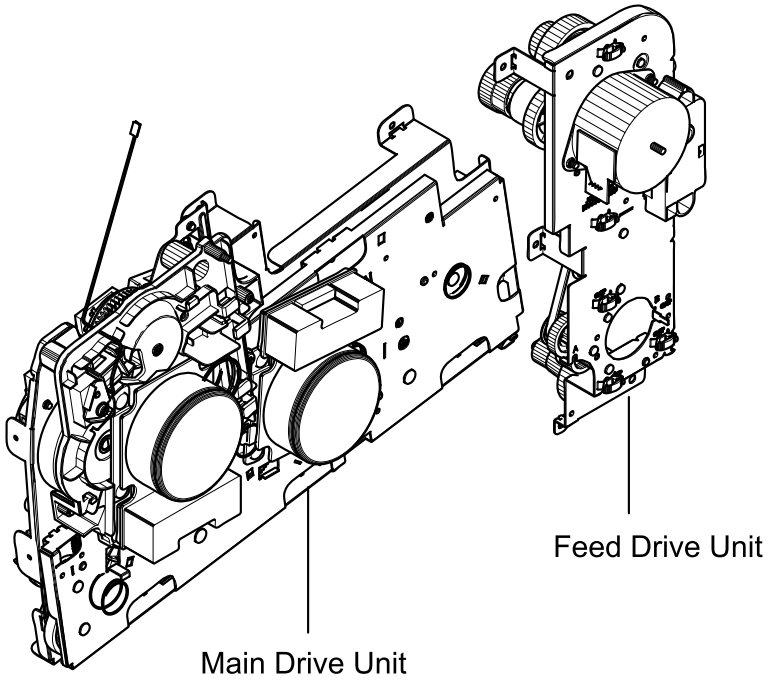
2.2.4.2. Transfer Roller

The transfer roller unit is assembled to the rear cover. The transfer roller delivers the toner of the OPC drum to the paper.



2.2.4.3. Drive Unit

This machine has the Main Drive Unit and Feed Drive Unit. The Main Drive Unit has 2 BLDC motors and Feed Drive Unit has 1 Step motor. These Drive unit is assembled to the right frame.



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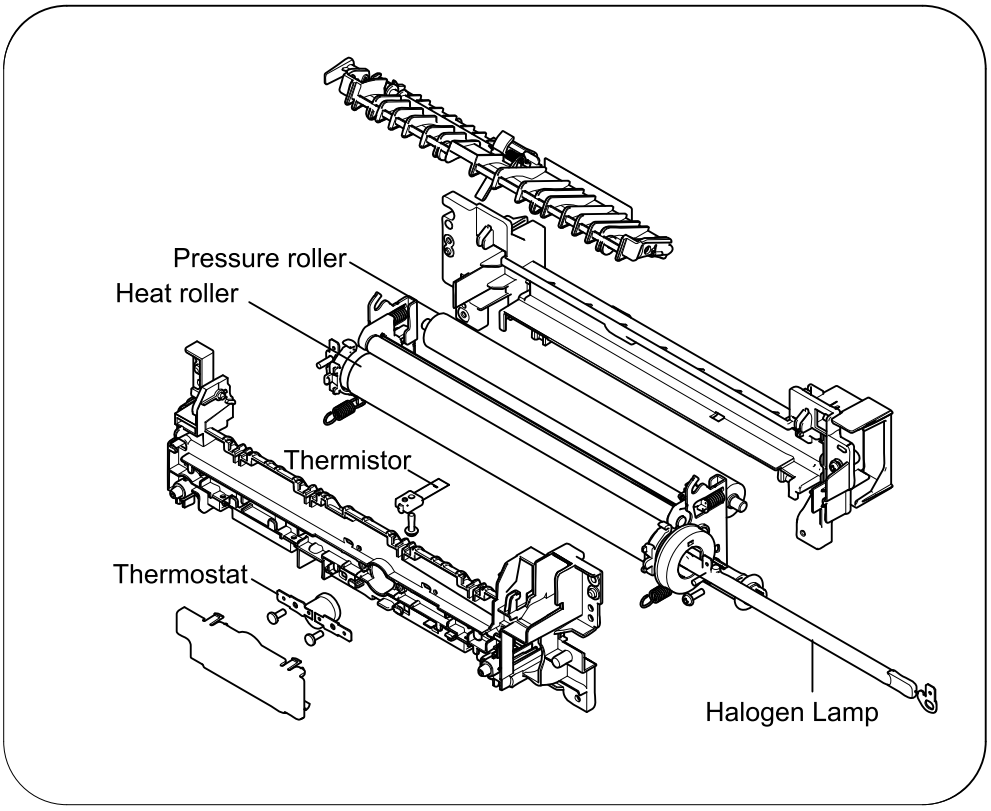
2.2.4.4. Fuser Unit

This unit consists of Heat Roller, a Thermostat, and Thermistor, etc. It fuses the toner that was transferred by the transfer roller onto the paper, by applying heat and pressure to complete fusing process.



1) **Thermostat**

When a heat lamp is overheated, a Thermostat cuts off the main power to prevent over- heating.

- Thermostat Type : Non- Contact type Thermostat
- Control Temperature : 195°C ± 5°C

2) **Thermistor**

It is a temperature detecting sensor.

- Temperature Resistance : 7 kΩ(180°C)

3) **Heat roller**

The heat roller transfers the heat from the lamp to apply a heat on the paper.

The surface of a heat roller is coated with Teflon, so toner does not stick to the surface.

4) **Pressure roller**

A pressure roller mounted under a heat roller is made of a silicon resin, and the surface also is coated with Teflon. When a paper passes between a heat roller and a pressure roller, toner adheres to the surface of a paper and is permanently fused.

5) **Halogen Lamp**

- Voltage : 120 V (115 ± 5 %) / 220 V : 230 ± 5 %
- Capacity : 850 Watt ± 25 W

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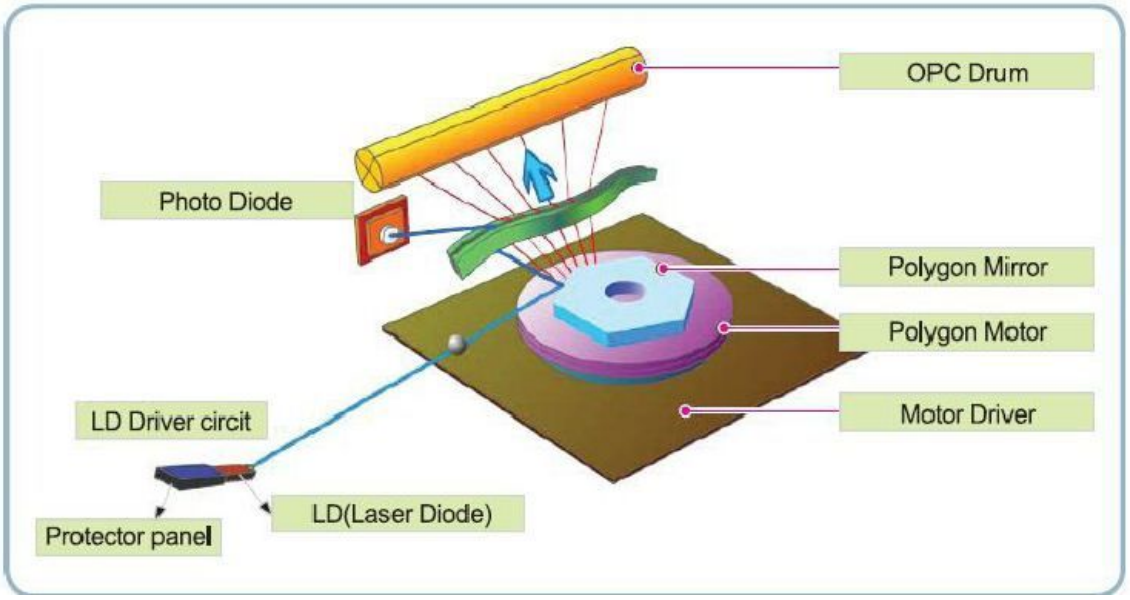
2.2.4.5. LSU (Laser Scanner Unit)

It is the core part of the LBP (Laser Beam Printer) which switches from the video data received to the controller to the electrostatic latent image on the OPC drum by controlling laser beam, exposing OPC drum, and turning principle of polygon mirror. The OPC drum is turned with the paper feeding speed. The HSYNC signal is created when the laser beam from LSU reaches the end of the polygon mirror, and the signal is sent to the controller. The controller detects the HSYNC signal to adjust the vertical line of the image on paper. In other words, after the HSYNC signal is detected, the image data is sent to the LSU to adjust the left margin on paper. The one side of the polygon mirror is one line for scanning.



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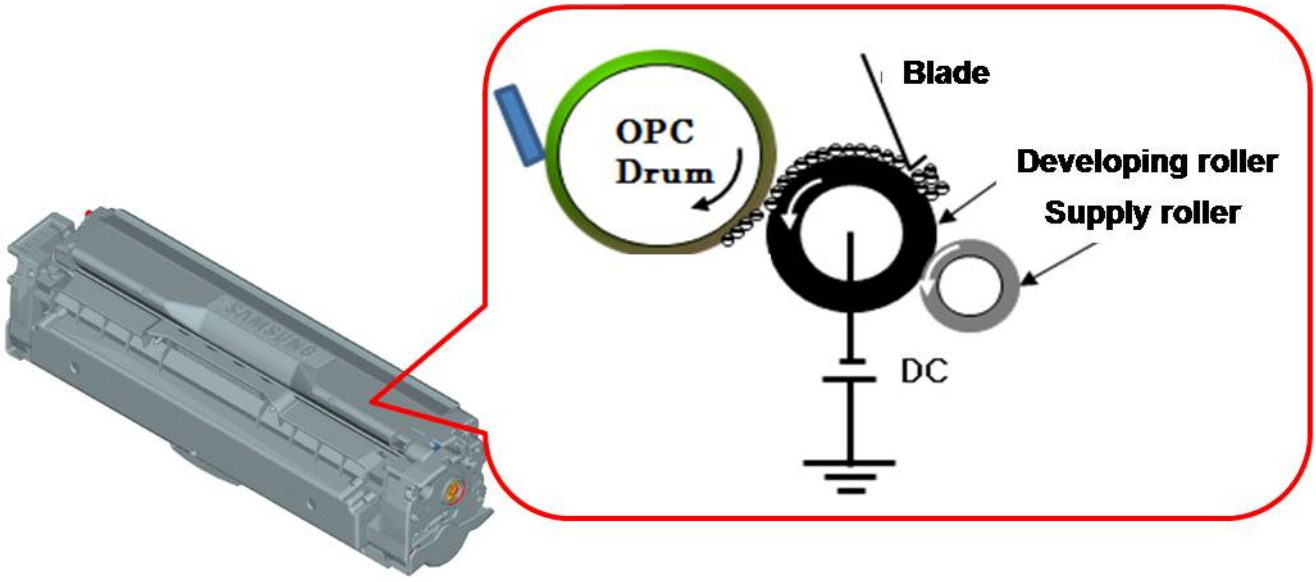
2.2.4.6. Toner Cartridge

By using the electronic photo process, it creates a visual image. In the toner cartridge, the OPC unit and the developing unit are in a body. The OPC unit has OPC drum and charging roller, and the developing unit has toner, supply roller, developing roller, and blade.

- Developing Method : Non magnetic single component non-contacting method
- Toner : Non magnetic single component pulverized type toner
- The life span of toner (ISO 19798 pattern / A4 standard)
  - Initial toner : 1K (K) / 0.7K (CMY)
  - Sales toner : 2.5K (K) / 1.8K (CMY)
- OPC Cleaning : Collect the toner by using cleaning blade
- Handling of wasted toner : Collect the wasted toner in the cleaning frame by using cleaning blade
- Classifying device for toner cartridge: ID is classified by CRUM



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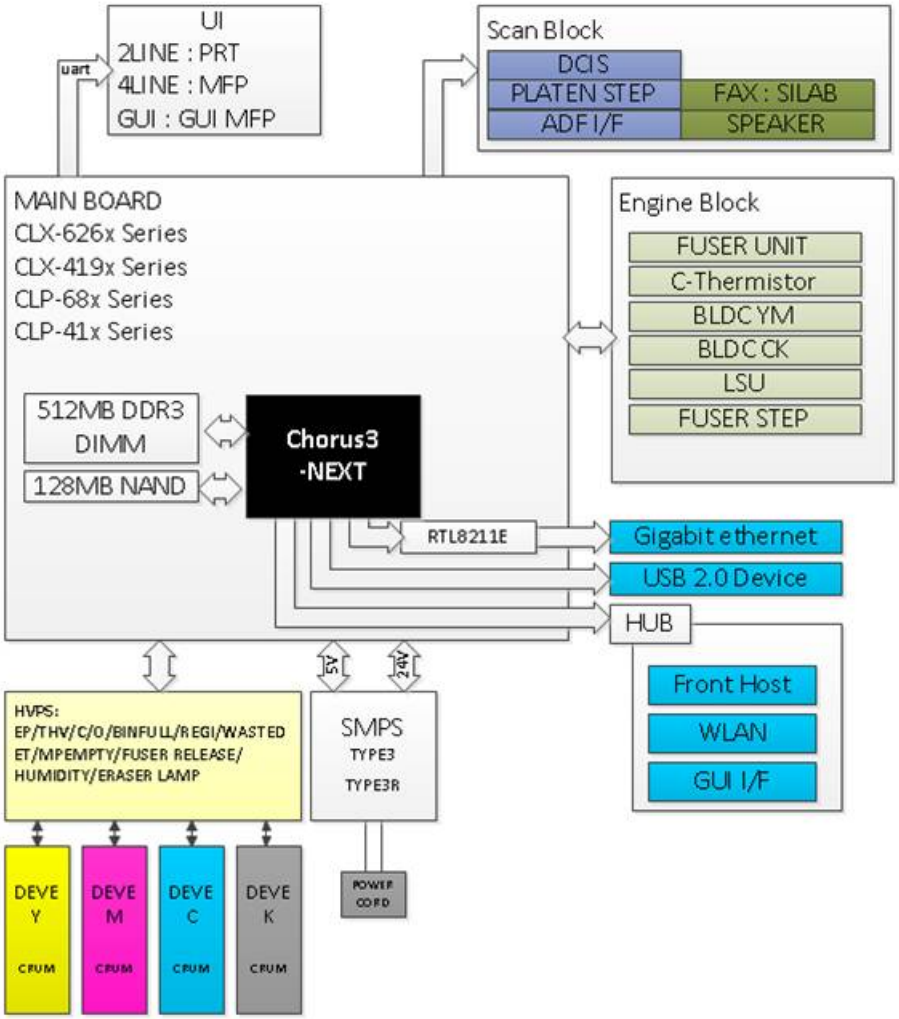
2.2.5. Hardware configuration

The CLX-419x series Electrical Circuit System consists of the following:

- Main board (System board)
- OPE board
- SMPS board
- HVPS board
- HUB board
- Fax board

Diagram of the CLX-419x series Electrical Circuit



CLX-419x series has a system board of integrated engine controller and video controller.

The engine controller controls all modules required to print, that is, LSU, HVPS/SMPS, Fuser, Motor etc. It communicates with the video control block inside CPU for printing. And it has the interface for all video sync signal to print out the video data.

The video controller receives print data from the host through network or USB Port and receives copy data from the scan controller. It takes this information and generates printable video bitmap data.

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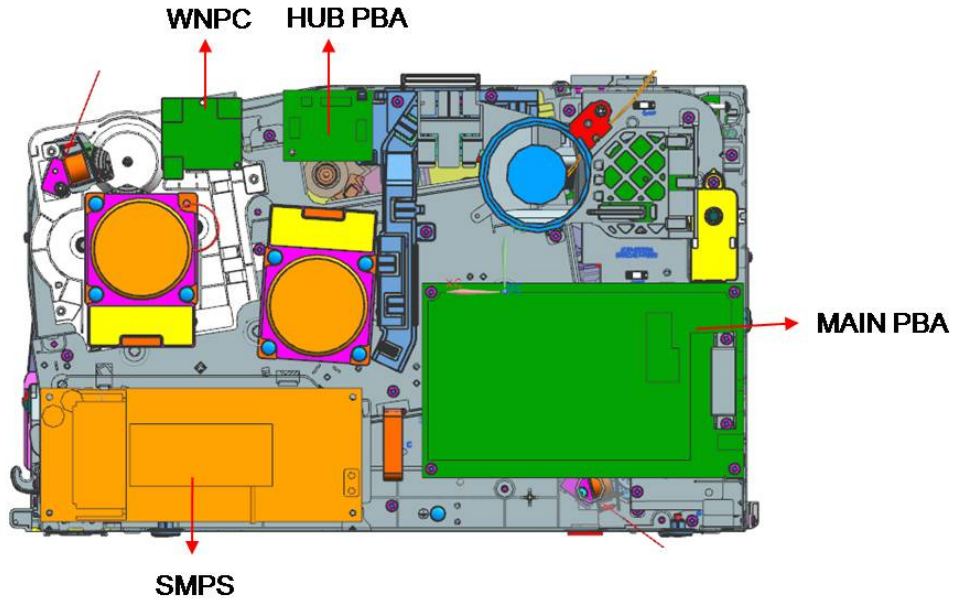
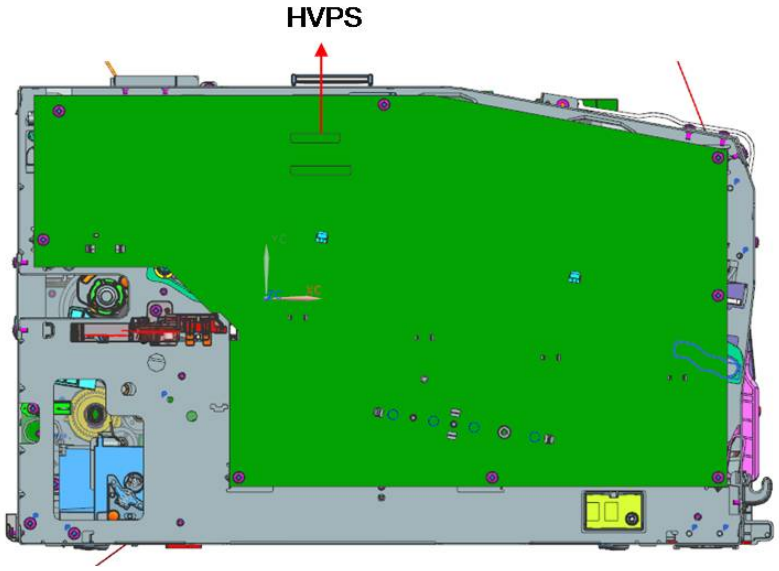
The main board is adopted 533 MHz C3N CPU that is integrated with engine/ video/ scan controller. It uses DDR3 256MByte.

Circuit board locations

The following diagrams show the locations of the printer circuit boards:





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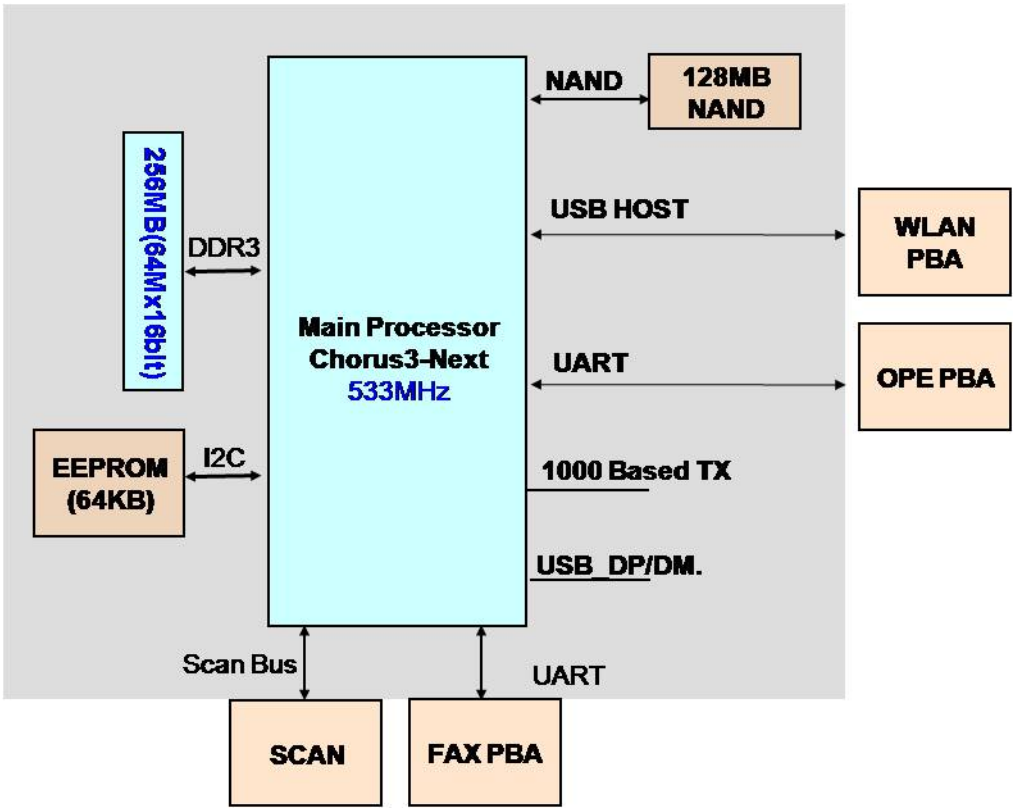
2.2.5.1. Main board

Chorus3–Next(C3N) chip is adopted as the main processor. Its process speed is 533 MHz. It is integrated engine controller, video controller, scan controller.

DDR3 256MB is adopted for high speed data processing. Boot adopted the 128MB NAND Flash.

USB is the embedded type and wired network supports 1000M full duplex.

[Main board diagram]



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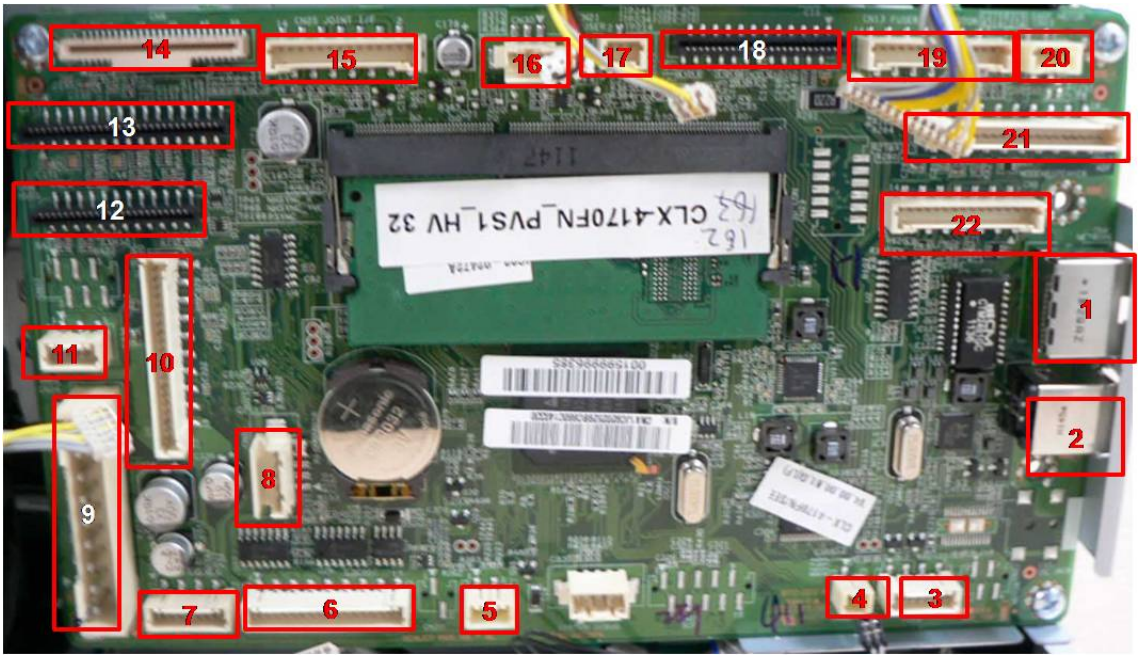
[Main board image]



- **Connection**

1	NETWORK connector
2	USB Device connector
3	Regi. Clutch connector
4	Pick Up Clutch connector
5	SMPS Fan T1 DC motor connector
6	ITB Joint connector
7	Fuser CONT. connector
8	HUB I/F connector (CLX-4195Fw only)
9	SMPS connector
10	BLDC Motor connector
11	DEVE Home sensor/solenoid connector
12	HVPS2 connector

13	HVPS1 connector
14	LSU connector
15	OPE connector
16	Fuser Fan connector
17	Thermistor connector
18	DCIS connector
19	Exit Motor connector
20	Platen Motor connector
21	RADF I/F connector
22	Fax I/F connector

- **Information**
  - Part Code
    - JC92-02529A : CLX-4195FW
    - JC92-02529B : CLX-4195FN
    - JC92-02529C : CLX-4195N

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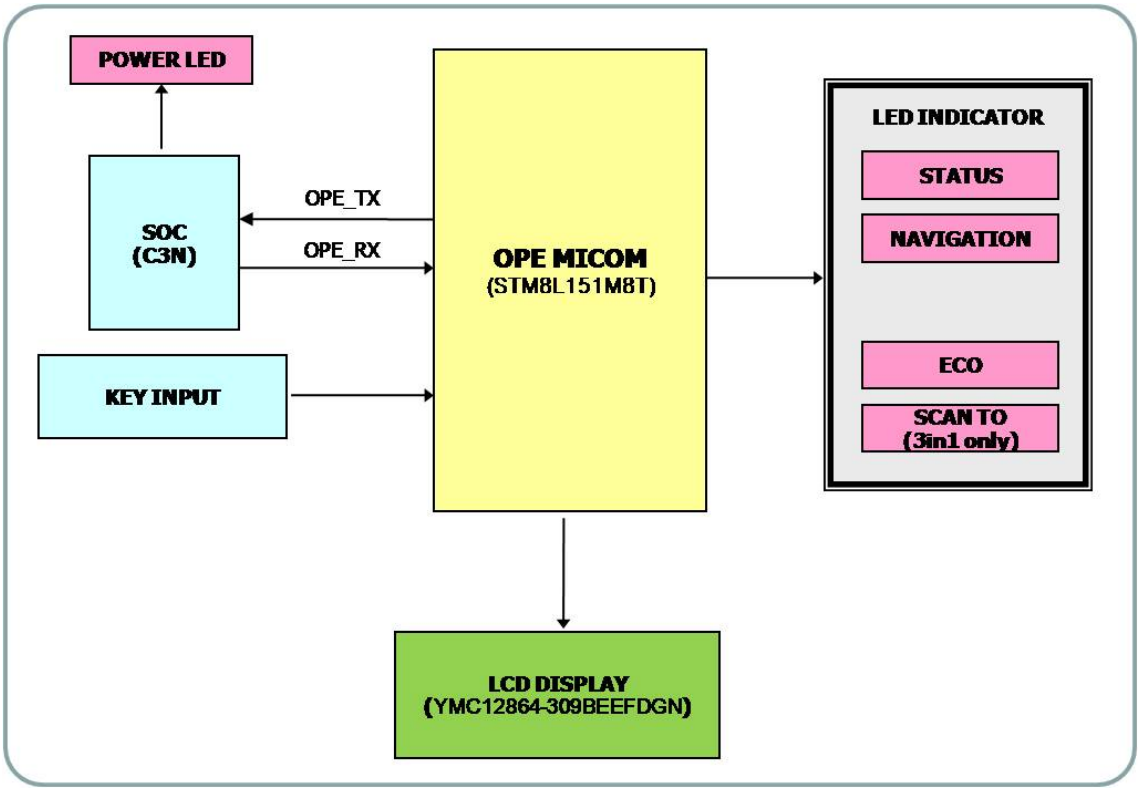
2.2.5.2. 4 Line OPE Controller (CLX-4195N_4195FN)

There are 2 types for 4 line OPE controller. The CLX-4195N has the 3 in 1 type and CLX-4195FN has the 4 in 1 type.

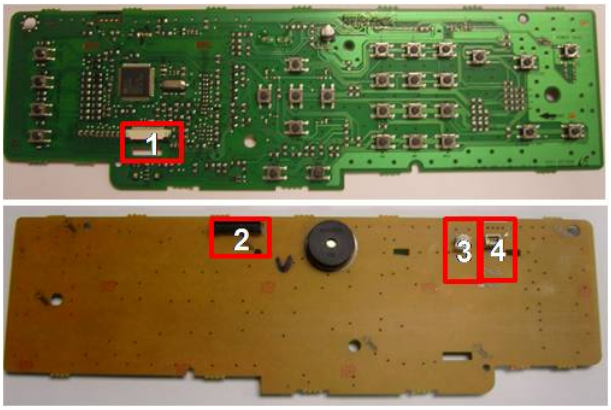
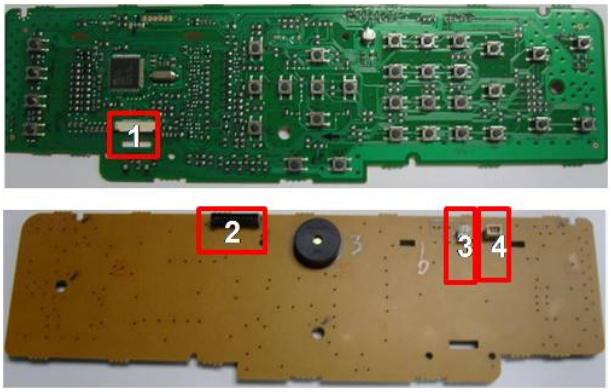
The OPE controller is composed of an OPE MICOM(STM8L151M8T6), STATUS LED, ECO LED, POWER LED, Navigation LED, Scan to LED(3in1 Only), 4 LINE LCD, KEY

The OPE controller communicates with main controller via UART. The power LED is controlled by the main board.

[OPE controller diagram]



[OPE controller image]

CLX–4195N (3 in 1 model)	CLX-4195FN(4 in 1 model)
	

• **Information**
  • Part Code : JC92-02521A
  • PBA Name : OPE-3in1
	• **Information**
	  • Part Code : JC92-02522A
	  • PBA Name : OPE-4in1

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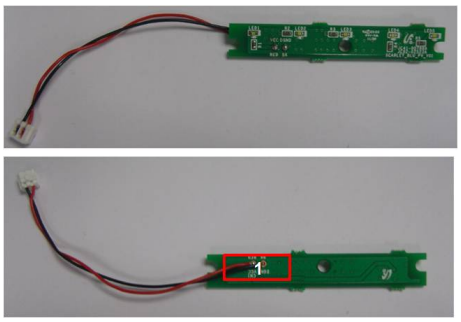
- **Connection**

1	FFC Connector to 4 line LCD
2	Interface connector to main controller
3	Interface connector to BLU (Back Light Unit) PBA
4	Interface connector to Scanner Home Sensor

BLU PBA (Back Light Unit)

This board is located over the LCD and functions the Back Light. It is included in LCD Assy and is assembled to OPE controller.



- **Information**
  - Part Code : JC92–02523A
  - PBA Name : BLU
- **Connection**

1	Interface Connector To OPE PBA

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2.2.5.3. GUI OPE Controller (CLX-4195FW)

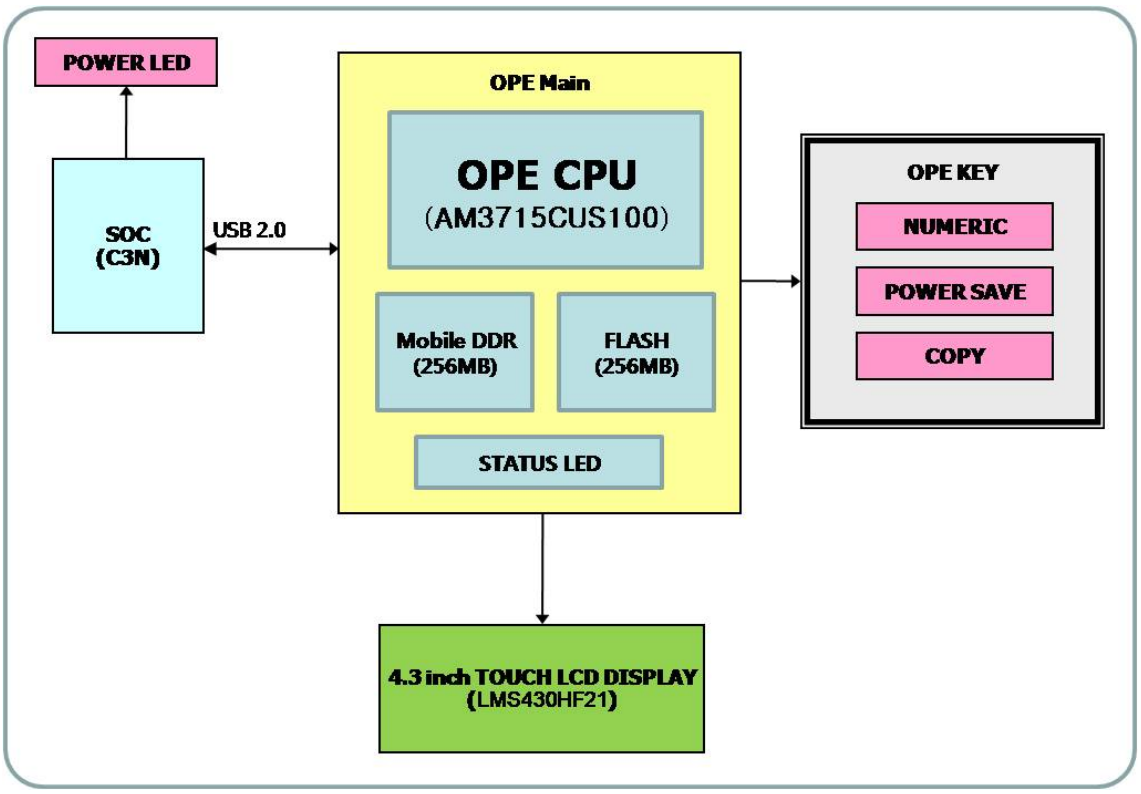
The GUI OPE controller consists of the OPE Main PBA and Key PBA.

The OPE Main PBA is composed of 1Ghz mobile CPU, 256MB mobile DDR, 256MB Flash. It is connected to 4.3 inch touch LCD and provides the Graphic User Interface.

The OPE Key PBA is composed of the numeric key, power save key, copy key.

The OPE communicates with main board via USB 2.0. The power LED is controlled by the main board.

[OPE controller diagram]



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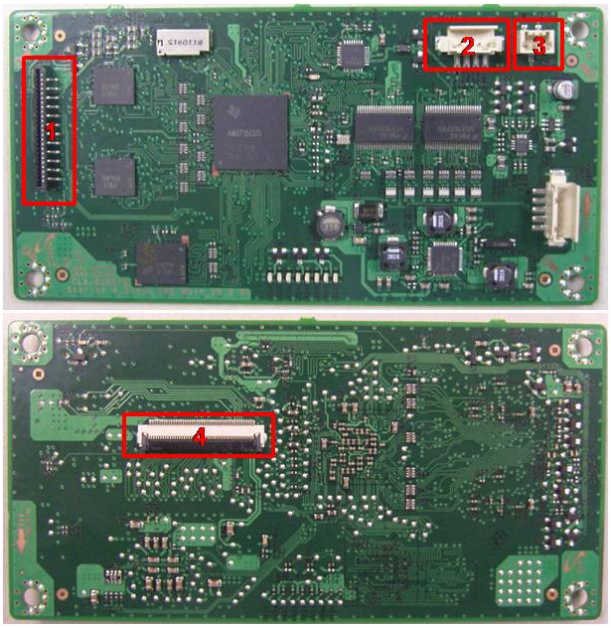
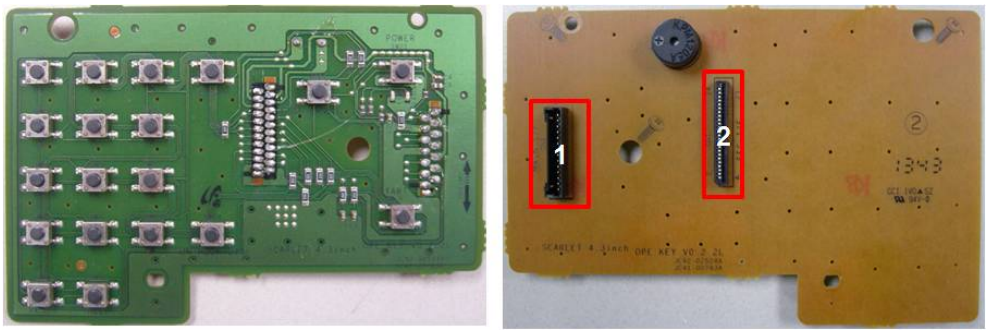
[OPE controller image]



- **Information**
  - Part Code : JC95–02505A
  - PBA Name : 4.3 inch OPE Main
- **Connection**

1	FFC connector to OPE Key PBA
2	USB Interface connector to main controller
3	Interface connector to scanner home sensor
4	FFC Interface connector to 4.3 inch touch LCD

[OPE Key PBA]



- **Information**
  - Part Code : JC92–02524A
  - PBA Name : 4.3 inch OPE Key
- **Connection**

1	Interface connector to main controller
2	FFC connector to OPE main PBA

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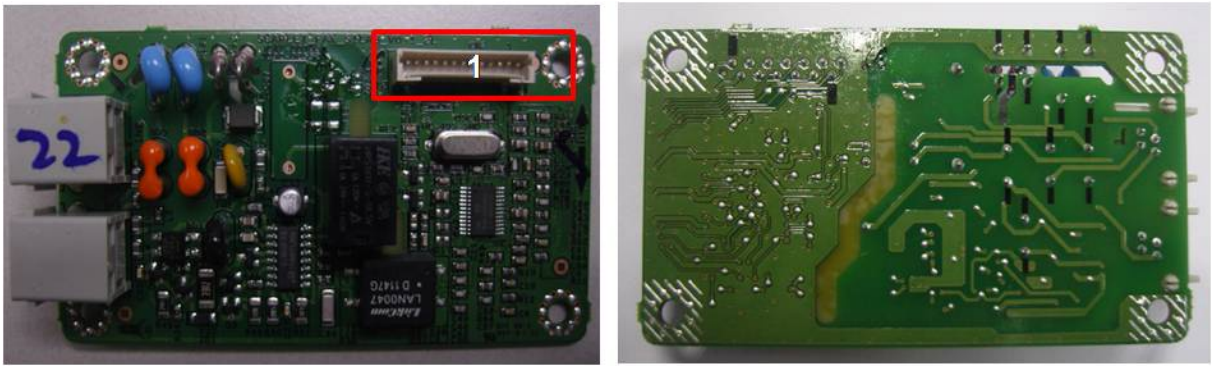
2.2.5.4. Fax Board

Fax controller (FCON) controls the fax sending and receiving.

SiLab Fax	
Compatibility	ITU-T G3, Super G3
Communication System	PSTN / PABX
Modem Speed	33.6 Kbps
Line Connection	PSTN or PABX (RJ-11)
Scan Speed	• Platen: 2sec @A4 • ADF: 5.5sec @A4
Scan Time	2 sec/A4 @203x98 dpi
Scan Setup Time	3.5 sec
Receive Mode	FAX, TEL, ANS/FAX
Compression	MH/MR/MMR/JBIG/JPEG
ECM	Yes

Resolution	• Standard: 203x98 dpi
	• Fine: 203x196 dpi
	• S.Fine:
	  • 203x392 dpi
	  • 300x300 dpi
	  • 306x392 dpi

Contrast	Adjustable 5 Levels
Fax Memory	32MB (in HDD)



- **Information**
  - Part Code : JC92–02552A
  - PBA Name : PBA LIU
- **Connection**

1	Interface Connector to Main Controller

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2.2.5.5. Wireless LAN board (CLX-4195FW only)

The Wireless LAN Module supports 802.11b/g/n. It communicates with video controller via USB.

- **Information**
  - Part Code : JC92–02510A
  - PBA Name : PBA-WNPC
- **Connection**

1	Interface Connector to System board (JC39–01858A/ JC39–01803A/ JC39–01853A, HARNESS-WLAN) **NOTE** The HARNESS-WLAN differ from your machine depending on your model.

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2.2.5.6. SMPS board

The SMPS (Switching Mode Power Supply) Board supplies electric power to the Main Board and other boards through a Main Controller. The voltage provided includes +24V from a 110V/220V power input.

- **Specification**

  1) AC 110V (90V ~ 135V)

  2) AC 220V (180V ~ 270V)

  3) Input Current: 10.0A (110V) / 8.0A (220V)

  4) Output Power: 111W
     - DC 5V : 15W
     - DC 24V : 96W

- **Information**

	110V	220V
Part Code	JC44-00097E	JC44-00090E
PBA Name	SMPS V1	SMPS V2

- **Connection**

1	AC_Inlet
2	FUSER_AC Output
3	OUTPUT_DC

- **Input / Output connector**
  - AC Input Connector(CON1)

PIN ASSIGN	PIN NO	Description
1	AC_L	AC Input
2	AC_N	

  - AC Input Connector(CON2)

PIN ASSIGN	PIN NO	Description
1	AC_L	AC Output

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PIN ASSIGN	PIN NO	Description
2	AC_N	for Heater Controller

- DC Output Connector (CON3)

PIN ASSIGN	PIN NO	Description
1	5V	+5V Power
2	GND	Ground
3	24V1	+24V Power
4	GND	Ground
5	24V2	+24V Power

- Signal Connector (CON4)

PIN ASSIGN	PIN NO	Description
1	GND	Ground
2	24V_ON_OFF	24V_ON_OFF
3	Relay on	Fuser Relay
4	24VS	Photo Triac Bias
5	Fuser On	Fuser On

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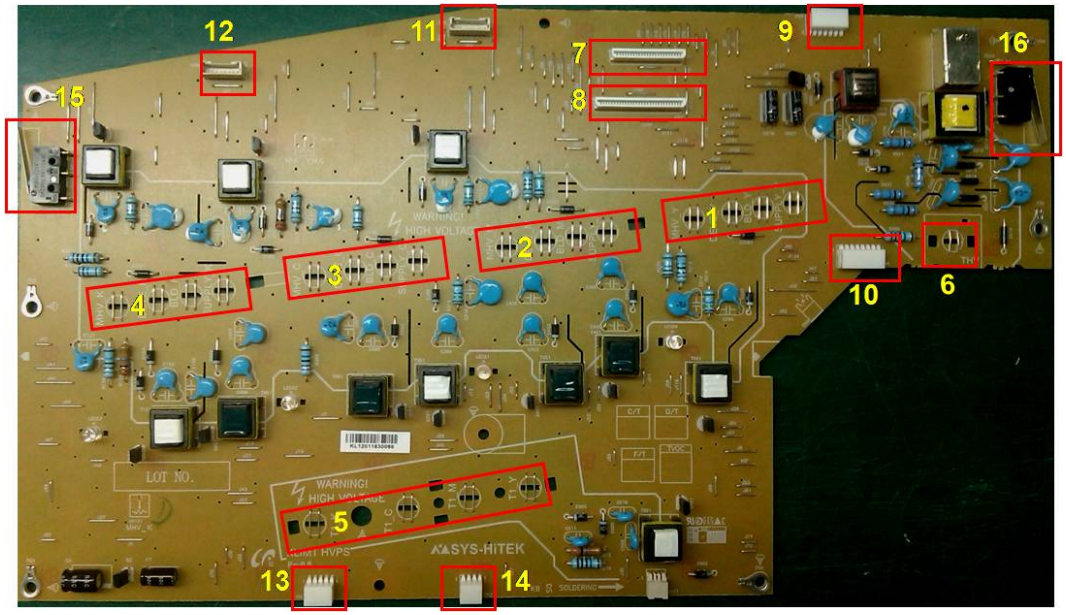
2.2.5.7. HVPS board

The HVPS board generates high-voltage channels which includes MHV, DEV, Blade, SUP, THV1, THV2.



- **Connection**

1	MHV/DEV/BLD/SUP Y
2	MHV/DEV/BLD/SUP M
3	MHV/DEV/BLD/SUP C
4	MHV/DEV/BLD/SUP K
5	THV1 YMCK
6	THV2
7	Main-HVPS I/F #1
8	Main-HVPS I/F #2
9	Paper Exit. Outbin Full
10	WTB interface
11	Crum Y,M
12	Crum C,K
13	Ambient, Humidity
14	Paper Regi.
15	Front Cover Open Switch
16	Rear Cover Open Switch

- **Information**
  - Part Code : JC44–00217A
  - PBA Name : HVPS

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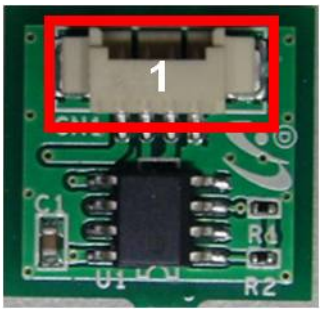
2.2.5.8. ITB EEPROM PBA

The ITB EEPROM PBA stored the ITB serial number and adjustment information like a S-Gain, ITB life.

It consists of the 4–pin connector, EEPROM, resistor, cap and is connected to the main board. It communicates with main board.



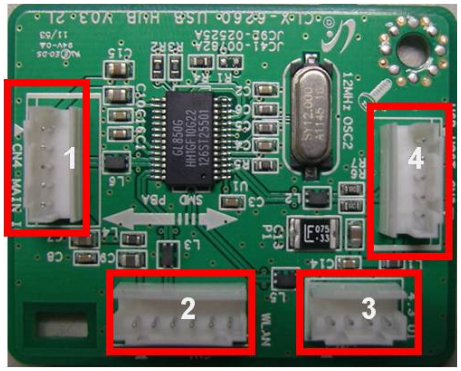
- **Information**
  - Part Code : JC92–02531A
  - PBA Name : PBA-ITB EEPROM
- **Connection**

1	Interface Connector to System Board (JC39–01814A, HARNESS-ITB)

2.2.5.9. HUB PBA

The HUB PBA connects the USB block of the main board and 3 external interface modules.

It consists of 4 connector and Crystal.Hub controller chip.



- **Information**
  - Part Code : JC92–02525A
  - PBA Name : PBA-HUB
- **Connection**

1	HUB PBA to Main PBA connector
2	HUB PBA to WLAN connector
3	HUB PBA to 4.3 inch GUI connector
4	HUB PBA to USB Host connector

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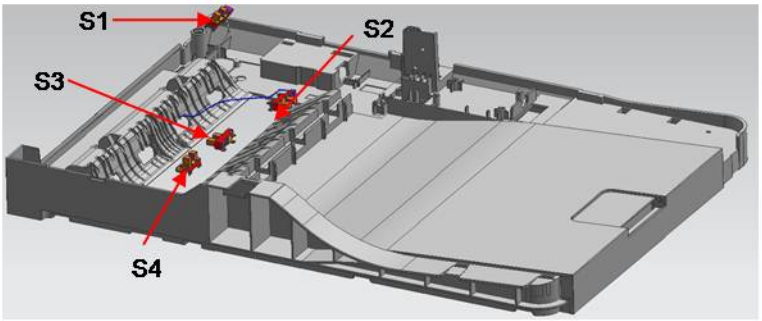
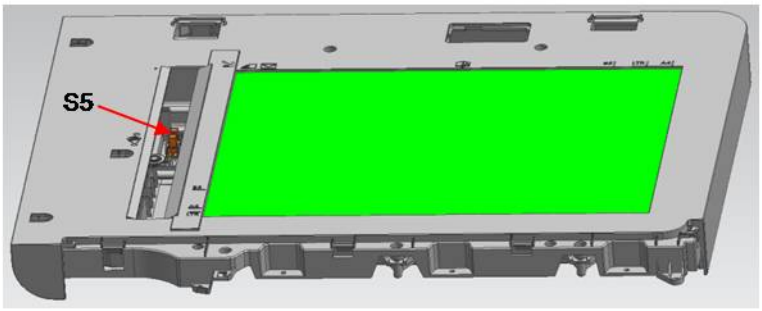
2.2.5.10. Electrical Parts Location

1) Sensors

[ADF]



[PLATEN]



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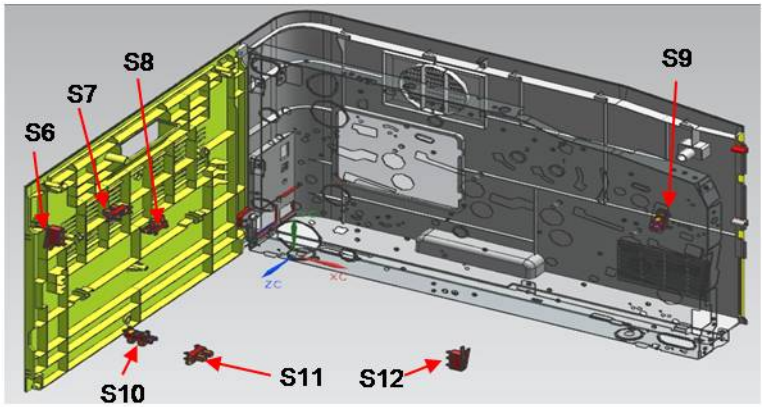

No.	Description	Controller	Function
S1	Photo interrupter (RADF Cover Open sensor)	RADF Board	Cover Open detection
S2	Photo interrupter (Paper empty sensor)		Paper detection
S3	Photo interrupter (Feed sensor)		Paper detection
S4	Photo interrupter (Regi sensor)		Paper detection
S5	Photo interrupter (Home Position sensor)	Main Board	CIS detection
S6	Switch Rear Cover (Cover Rear Open sensor)	HVPS	Cover Open detection
S7	Photo interrupter (Fuser Exit sensor)	Main Board	Fuser Exit detection
S8	Photo interrupter (Binfull sensor)	Main Board	Binfull detection
S9	Photo interrupter (Deve Nip sensor)	Main Board	Deve Nip detection
S10	Photo interrupter (WTB Open sensor)	Main Board	WTB Open detection
S11	Photo interrupter (Empty sensor)	Main Board	Empty detection
S12	Switch Front Cover (Cover Front Open sensor)	HVPS	Cover Open detection

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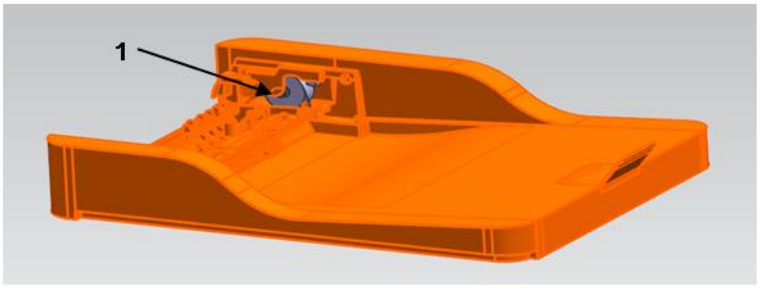
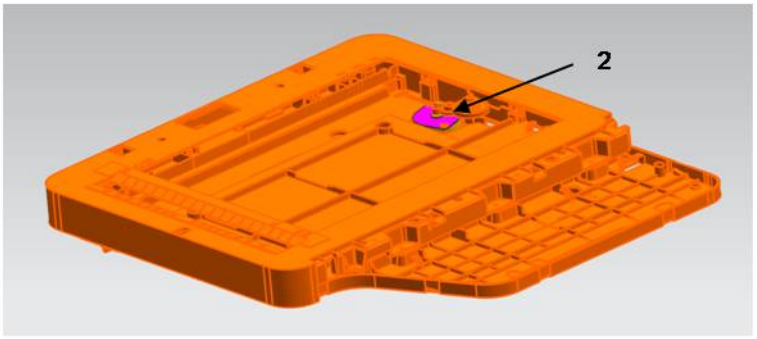
2) Motor, Clutch, Solenoid, etc

[ADF]



[PLATEN]



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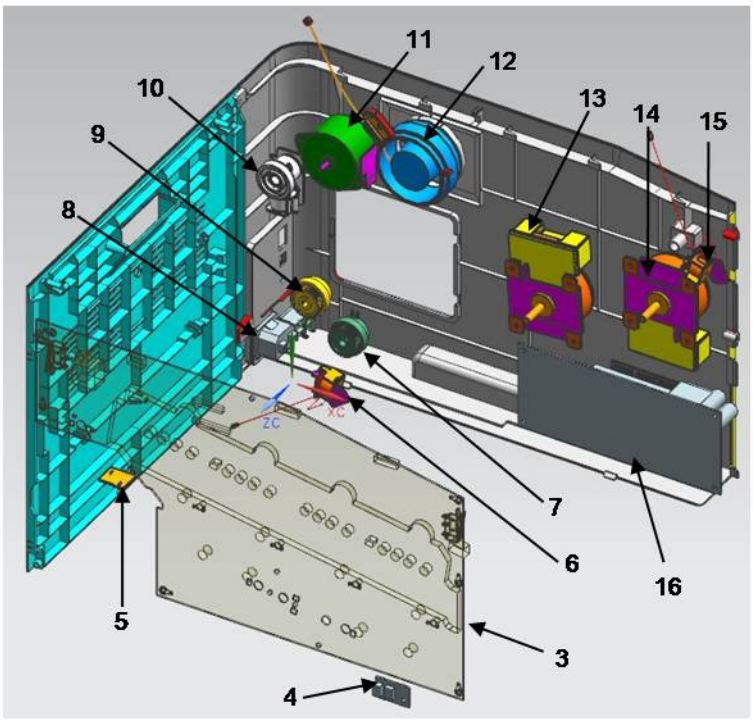

No.	Description
1	ADF Motor
2	Scan Motor
3	HVPS
4	Humidi.-Temp Sensor
5	PBA Waste Sensor
6	Solenoid MP
7	Clutch-Electric Z41
8	Power Inlet
9	Clutch-Electric

No.	Description
10	Clutch-Fuser Cam
11	Motor-Step
12	Fan Type-5
13	Motor BLDC-BT6
14	Motor BLDC-BT6
15	Solenoid
16	SMPS

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2.2.6. Engine F/W Control Algorithm

2.2.6.1. Feeding

If feeding from a cassette, the drive of the pickup roller is controlled by controlling the solenoid. The on/off of the solenoid is controlled by controlling the general output port or the external output port. While paper moves, occurrence of Jam is judged as below.

Item	Description
Jam in Tray 1	• After picking up, paper cannot be entered because to paper is not fed. • After picking up, paper entered but it cannot reach to the feed sensor in predetermined period of time. due to slip, etc. • After picking up, if the feed sensor is not on, re-pick up. After re-picking up, if the feed sensor is not on after certain time, it is JAM 0. • Even though the paper reaches to the feed sensor, the feed sensor doesn't be ON.
Jam inside machine	• After the leading edge of the paper passes the feed sensor, the trailing edge of the paper cannot pass the feed sensor after predetermined period of time. • After the leading edge of the paper passes the feed sensor, the paper cannot reach the exit sensor after predetermined period of time. * The paper exists between the feed sensor and the exit sensor.
Jam in Exit area	After the trailing edge of the paper passes the feed sensor, the paper cannot pass the exit sensor predetermined period of time.

2.2.6.2. Transfer

The charging voltage, developing voltage and the transfer voltage are controlled by PWM (Pulse Width Modulation). The each output voltage is changeable due to the PWM duty. The transfer voltage admitted when the paper passes the transfer roller is decided by environment conditions. The resistance value of the transfer roller is changed due to the surrounding environment or the environment of the set, and the voltage value, which changes due to the environments, is changed through AD converter. The voltage value for impressing to the transfer roller is decided by the changed value.

2.2.6.3. Fusing

The temperature change of the heat roller's surface is changed to the resistance value through the use of a thermistor. The Main Board uses the resistance value of the Thermistor and converts it to a voltage value through the use of an AD converter, the temperature is decided based on the voltage value read. The AC power is controlled by comparing the target temperature to the value from the thermistor. If the value from the thermistor is out of controlling range while controlling the fusing, the error stated in the below table occurs.

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- Open Heat Error

  When the engine operates the warm-up process, if the temperature of the fixing unit is not higher than a specified temperature, the engine defines Open Heat Error. When this error is detected, the engine stops all functions and keeps the error state. Also, the engine informs the error status of the main system, so it can take appropriate action; and then the error message is displayed at LCD window or LED informing the error status of the user.

- Low Heat Error

  When the engine is at stand-by, printing or warm-up mode, if the temperature of the fixing unit is lower than the specified temperature at each state and the lower temperature state is maintained during the specified time, the engine defines Low Heat Error. When this error is detected, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system, so it can take appropriate action; and then the error message is displayed at LCD window or LED informing the error status of the user.

- Over Heat Error

  For overall engine state, if the temperature of the fixing unit is higher than the specified temperature and the temperature state is detected for a specific duration, then the engine defines Over Heat Error. When this error is detected, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system, so it can take appropriate action; and then the error message is displayed at LCD window or LED informing the error status of the user.

2.2.6.4. LSU

LSU receives the image data from PVC or HPVC and make the latent image on OPC surface. It uses the single beam, LD. The errors related to LSU are as follows:

- By Lready

  When the printing is started, the engine drives the polygon motor of LSU. After the specified time is elapsed, if the motor is not in a ready status, the engine detects the error that the polygon motor is not in a ready status. If this error happens, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system and the error message is displayed at LCD window to inform the error status of the user.

- By Hsync

  When the polygon motor is ready, the LSU sends out the signal called Hsync and used to synchronize with each image line. So, if the engine does not detect consecutively the signal for a fixed time, it defines the Hsync Error. If this error happens, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system and then the error message is displayed at LCD window to inform the error status of the user. LSU Error Recovery: If the LReady or Hsync error happens, the paper is exited before the error code is initiated. The engine mode is changed to recovery mode and the engine informs the main system of the engine mode. And the engine checks the LSU error. If the error doesn’t happen, the printing job.

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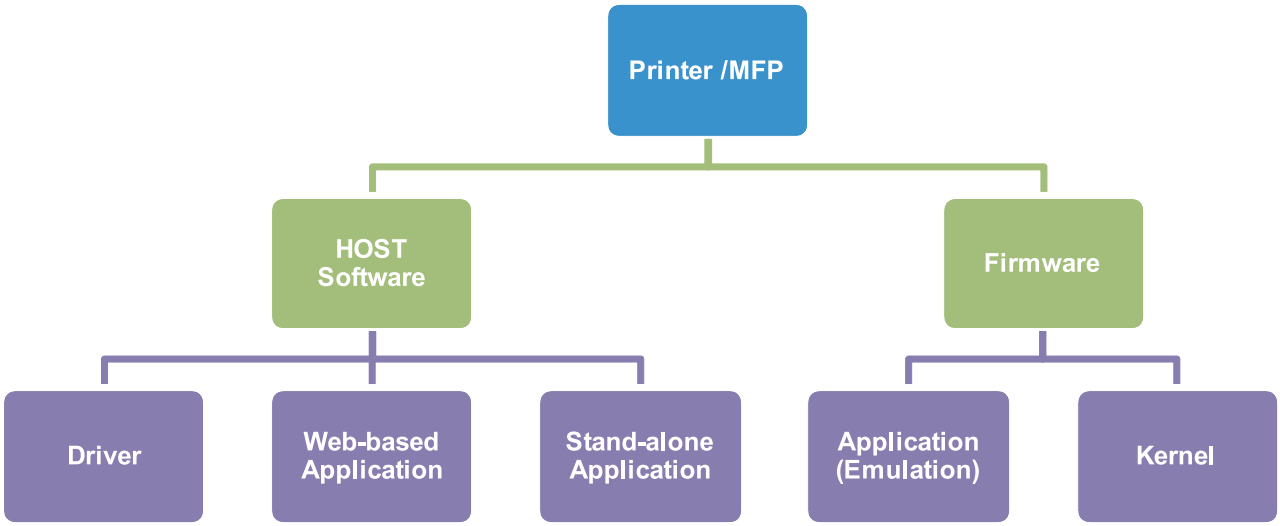
2.2.7. Software Descriptions

2.2.7.1. Software system overview

The software system of this model is constructed with

- Host Software part that the application software operated in Window and Web Environment
- Firmware parts that is a Embedded software controls printing job.

2.2.7.2. Architecture



Host Software is made up of

1) Graphic User Interface offers the various editing functions to user in Host.
2) Driver translates the received document to a Printing Command language which printer can understand and transfers data to spooler.
3) Stand-alone Application offers the various printing application such as Easy Printer Manager, Printer Status in Window system.
4) Web-based-Application offers the same functions as Stand-alone Application in Web environment.

Firmware is made up of

1) Application (Emulation) that is a interpreter translates data received from Host to a printing language (PCL, PS, GDI, etc.) to be able to make the user to take same output as originally one what composed in Host.
2) Kernel controls and manage the whole procedure including Control flow and Printing Job before transferring to Engine system.

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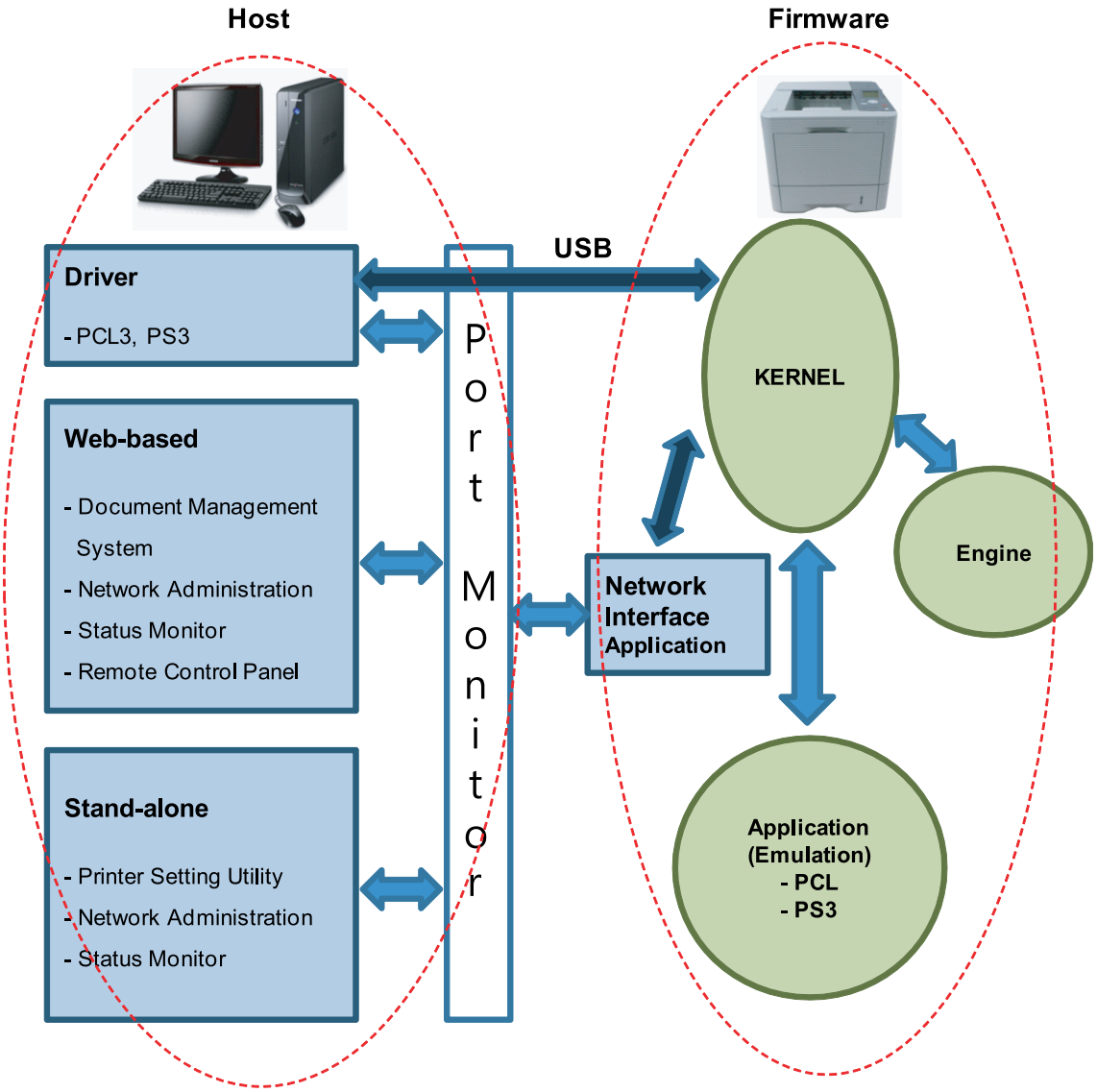
2.2.7.3. Data and Control Flow



The above Block Diagram is explained that:

Host Side is made up of

1) Driver that is Windows application software translate printed data to one of printer language and create spooler file.

2) Web-based Application that offer a various printer additional functions, management of printing job, printer administration, Status monitor to monitoring the printer status by real time in Web, independent environment on OS.

3) Stand-alone Application that is a similar Window software as same as above 2.

4) Port Monitor that manages the network communication between spooler and Network Interface Card, or various additional application and Network Interface Card,(this is, at first, make communication logical port, manage the data, transfer them from spooler to network port, and offer the result of printing).

Firmware Side is made up of

1) Network Interface Card is that relay the communication between Host and kernel using various network protocol.

2) Kernel is that manages the flow control of emulation procedure, receiving data from Host or Network card and printing with engine & rendering job.

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3) Emulation is that interprets the various output data from selected emulation.

4) Engine is that prints rendered bit-map data to paper with required size and type by Kernel.

And then, for Job Spooling function for Multi-User, Multi-Printing that is occurred in Network printing and various additional printing functions, this Kernel use max. 10 Queuing systems in a memory.

In Printing, the two procedures are

1) Case of using USB Port

- After user start to print the wanted document to PCL string or compressed GDI bit-map data, the Driver translates the all graphic data of the client PC and send data to host spooler. And then the spooler sends the data stream to the printer via USB port.
- Kernel receives this data from Host, and then select emulation fit to data and start selected one. After emulation job end, Kernel sends the output bit-map data to Engine using Printer Video Controller (by clock type for LSU).
- Engine print the received data to required paper with the sequential developing process.

2) Case of using Network Interface Card

- After user start to print the wanted document to PCL string or compressed GDI bit-map data, Driver translate the all graphic data of it and send data to host spooler.
- If so, Port monitor managing network port receives data from spooler and sends a data stream to the Network Interface Card.
- Network interface card receives it and send to Kernel part.
- Kernel receives this data from Host, and then select emulation fit to data and start selected one. After emulation job end, Kernel sends the output bit-map data to Engine using Printer Video Controller (by clock type for LSU).
- Engine print the received data to required paper with the sequential developing process.

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3. Disassembly and Reassembly

3.1. Precautions when replacing parts

3.1.1. Precautions when assembling and disassembling

- Use only approved Samsung spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct. Failure to do so could result in damage to the machine, circuit overload, fire or electric shock.
- Do not make any unauthorized changes or additions to the printer, these could cause the printer to malfunction and create electric shock or fire hazards.
- Take care when dismantling the unit to note where each screw goes. There are 19 different screws. Use of the wrong screw could lead to system failure, short circuit or electric shock.
- Do not disassemble the LSU unit. Once it is disassembled dust is admitted to the mirror chamber and will seriously degrade print quality. There are no serviceable parts inside.
- Regularly check the condition of the power cord, plug and socket. Bad contacts could lead to overheating and firfe. Damaged cables could lead to electric shock or unit malfunction.

3.1.2. Precautions when handling PBA

Static electricity can damage a PBA, always used approved anti-static precautions when handling or storing a PBA.

- **Precautions when moving and storing PBA**
  1) Please keep PBA in a conductive case, anti-static bag, or wrapped in aluminum foil.
  2) Do not store a PBA where it is exposed to direct sunlight.
- **Precautions when replacing PBA**
  1) Disconnect power connectors first, before disconnecting other cables.
  2) Do not touch any soldered connections, connector terminals or other electronic parts when handling insulated parts.
- **Precautions when checking PBA**
  1) Before touching a PBA, please touch other grounded areas of the chassis to discharge any static electrical charge on the body.
  2) Take care not to touch the PBA with your bare hands or metal objects as you could create a short circuit or get an electric shock. Take extra care when handling PBAs with moving parts fitted such as sensors, motors or lamps as they may get hot.
  3) Take care when fitting, or removing, screws. Look out for hidden screws. Always ensure that the correct screw is used and always ensure that when toothed washers are removed they are refitted in their original positions.

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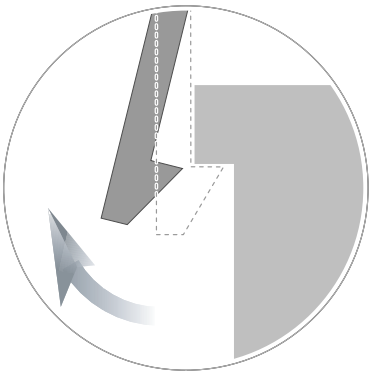
3.1.3. Releasing Plastic Latches

Many of the parts are held in place with plastic latches. The latches break easily; release them carefully.

To remove such parts, press the hook end of the latch away from the part to which it is latched.



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3.2. Screws used in the printer

The screws listed in the table below are used in this printer. Please ensure that, when you disassemble the printer, you keep a note of which screw is used for which part and that, when reassembling the printer, the correct screws are used in the appropriate places.

NOTE

This list is based on CLX-4195FW. So, this list may differ from your machine depending on its model.

Parts Code	Location	Description	Qty
6003-000196	FUSER	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	7
6003-000282	FUSER	SCREW-TAPTYPE;BH,+,-,B,M3,L8,ZPC(BLK), SWRCH18A,-	2
6003-000269	FRAME	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	4
6003-000269	FRAME BASE	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	31
6002-000440	FRAME-LEFT	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	7
6003-000269	FRAME-LEFT	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	11
6002-000440	FRAME-CRUM HOLDER	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	8
6002-000440	FRAME-RIGHT	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	3
6003-000269	FRAME-RIGHT	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	20
6002-000440	FRAME-GUIDE RAIL CST R	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	1
6003-000269	FRAME-PICK UP BRACKET	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	8
6003-000196	FRAME MAIN	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	6
6003-000269	FRAME MAIN	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	41
6003-000301	FRAME MAIN	SCREW-TAPTYPE;BH,+,S,M4,L6,ZPC(WHT), SWRCH18A	1
6003-000196	FRAME-FAN	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	1
6003-000196	DRIVE-MAIN	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	5
6003-000269	DRIVE-MAIN	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	14
6003-000301	DRIVE-MAIN	SCREW-TAPTYPE;BH,+,S,M4,L6,ZPC(WHT), SWRCH18A	7
6009-001697	DRIVE-MAIN	SCREW-SPECIAL;PH,+,M3,L4.4(3),NI PLT, SWRCH18A, MACH,2 BODY	1
6003-000269	DRIVE-FEED	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	4
6003-000282	FRAME-RETARD	SCREW-TAPTYPE;BH,+,-,B,M3,L8,ZPC(BLK), SWRCH18A,-	4
6003-000196	COVER-FRONT	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	6
6003-000196	COVER-MIDDLE	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	10
6003-000196	COVER-OPE	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	11
6003-000269	COVER-OPE	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	4
6002-000440	SCANNER	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	10
6003-000196	COVER-PLATEN LOWER	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	3
6002-000440	PLATEN	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	5
6002-000440	PLATEN-UPPER	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	3
6002-000440	PLATEN-FRAME	SCREW-TAPPING;PWH,+,2,M3,L8,ZPC(BLK), SWRCH18A	4

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Parts Code	Location	Description	Qty
6003-000269	PLATEN -DRIVETRAIN	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	2
6003-000196	MAINLINE	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT, SWRCH18A	12
6003-000269	MAINLINE	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT), SWRCH18A,-	37
6003-000261	FRAME-DRAWER	SCREW-TAPTYPE;BH,+,-,B,M3,L6,ZPC(WHT), SWRCH18A,-	4

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3.3. Replacing the maintenance parts

3.3.1. Toner Cartridge

1. Open the front cover.

2. Hold the green handle and pull the guide-cartridge.

3. Remove all toner cartridges.

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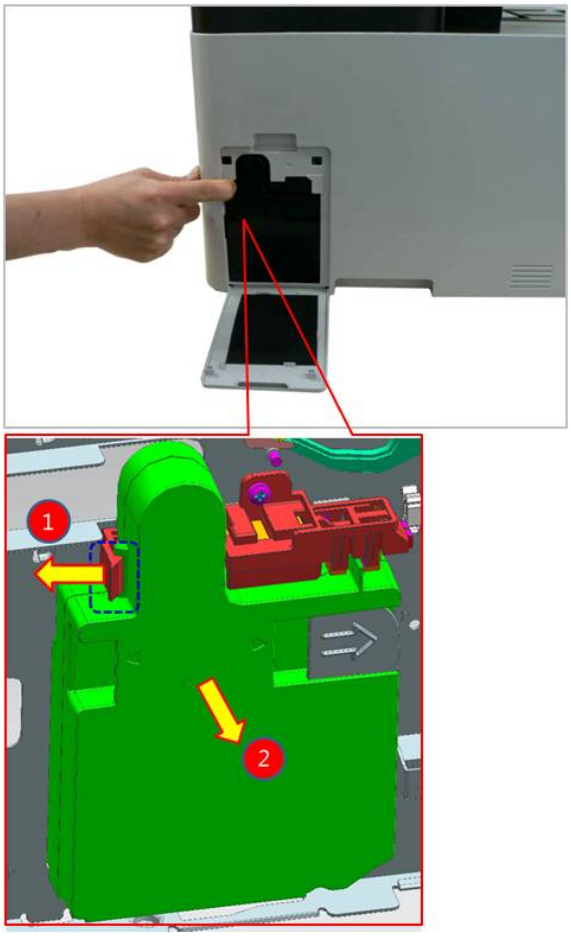
3.3.2. Waste Toner Container

1. Open the Waste Toner Container cover. Remove the Waste Toner Container while pulling the hook to the direction of arrow.



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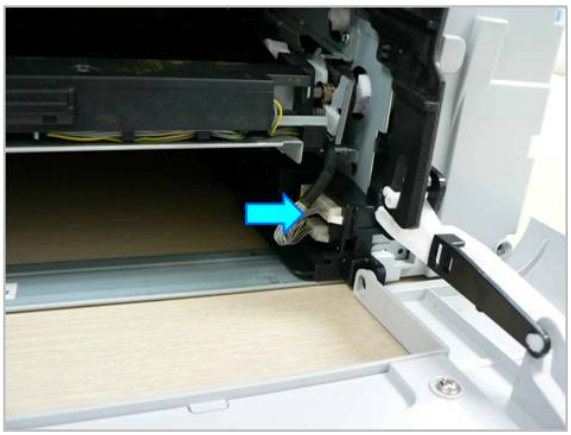
3.3.3. ITB Unit

1. Remove all toner cartridges.
2. Remove the guide-cartridge by releasing the right hook.

3. Remove the cassette.

4. Remove the harness cover after removing 1 screw.

5. Unplug the connector.



6. Lift up the both sides of the ITB Unit slightly.

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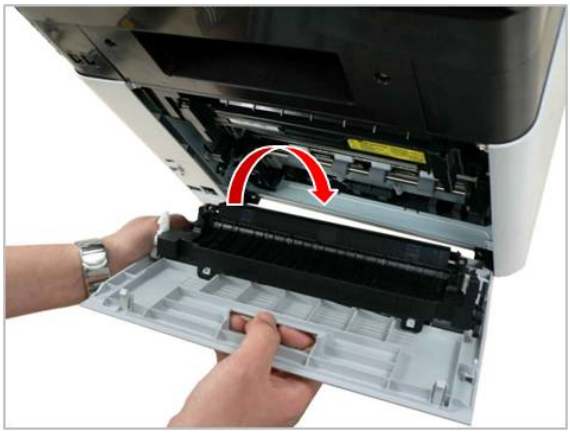
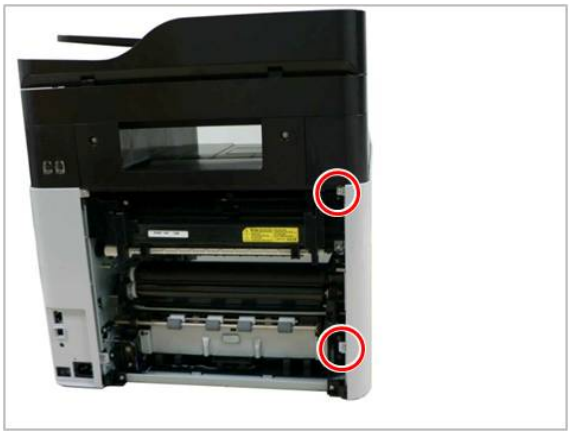
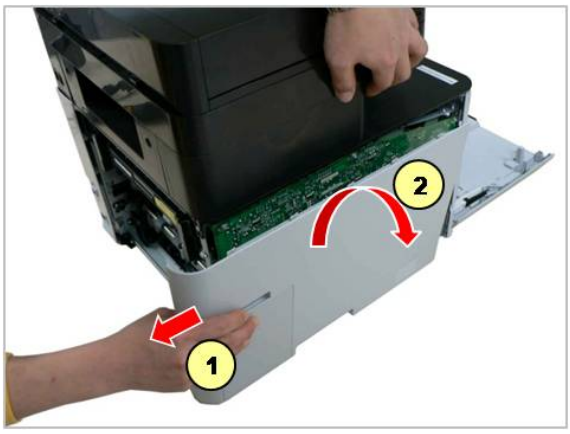
7. Open and remove the rear cover.



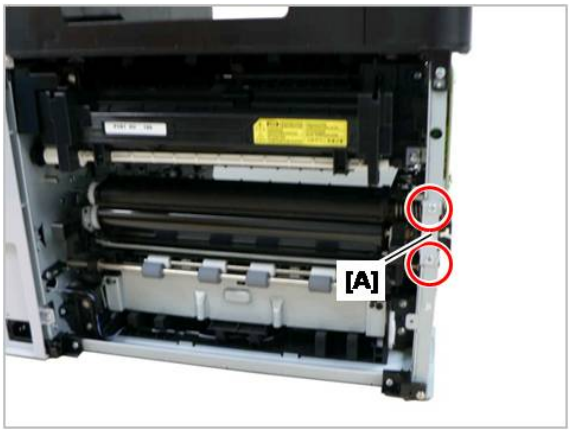
8. Remove 2 screws securing the left cover from the rear.



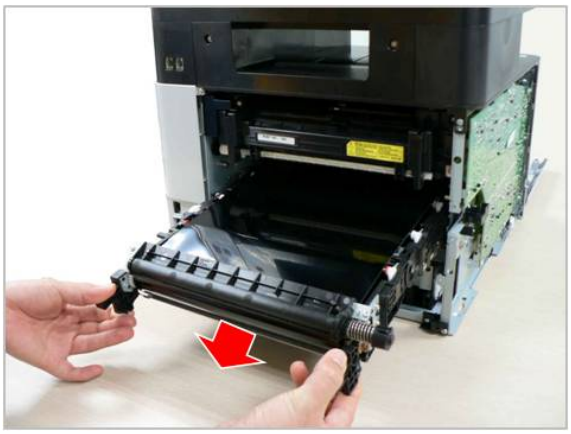
9. Release the left cover by pulling it to the direction of arrow.



10. Remove the bracket[A] after removing 2 screws.



11. Remove the ITB Unit from the rear.



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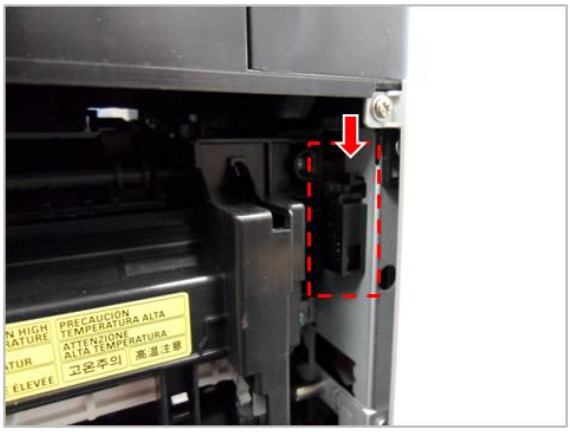
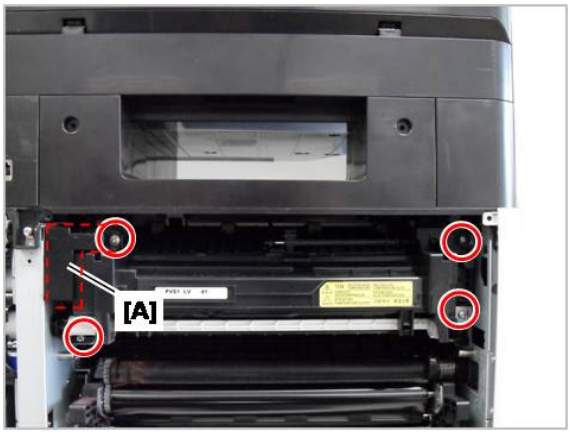
3.3.4. Fuser Unit

1. Open the rear cover.

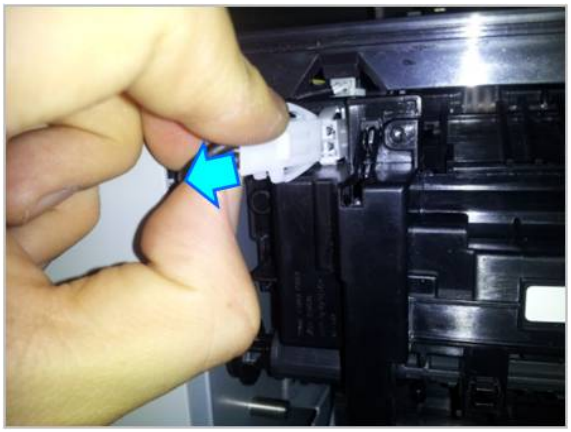
2. Remove the part as shown in below.



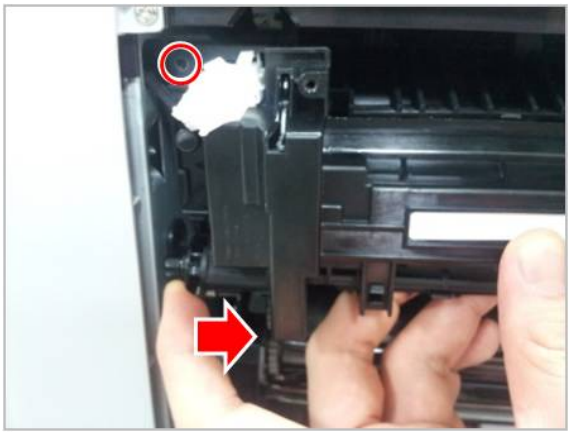
3. Remove 4 screws. Remove the cover[A].



4. Unplug the AC connector.



5. Remove 1 screw. Take off the fuser unit while pulling the shaft-cam to the right.



6. Unplug the thermistor connector. Remove the fuser unit perfectly.

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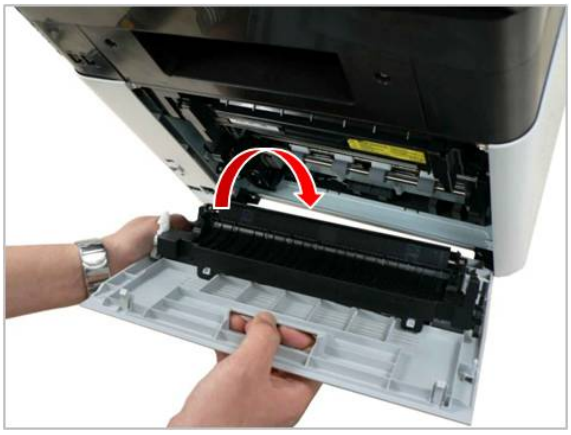
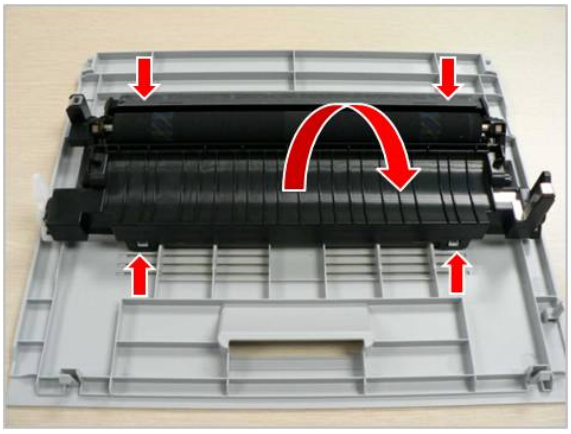
3.3.5. Transfer Roller Assy

1. Open and remove the rear cover.

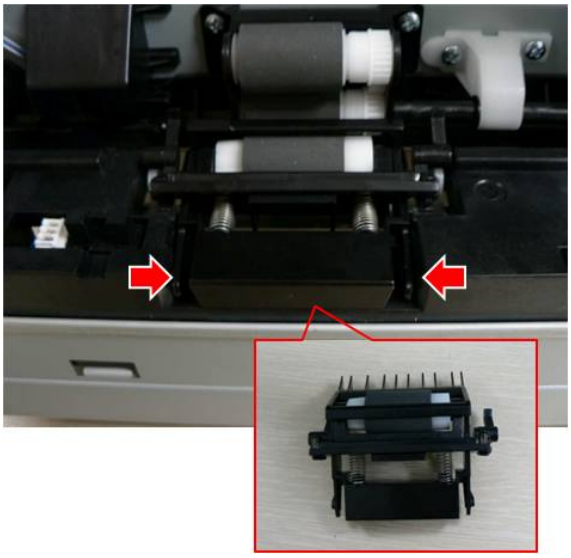


2. Remove the Transfer Roller Assy by releasing 4 hooks.

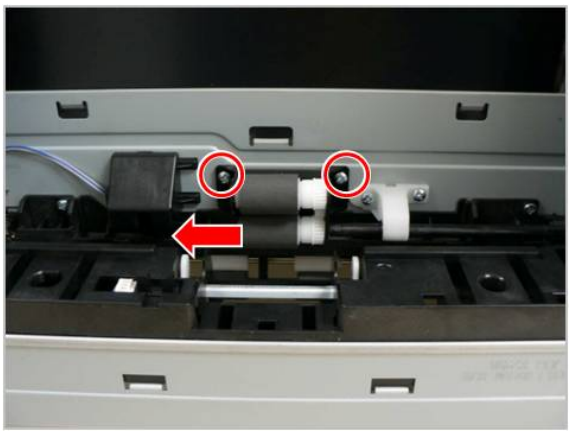


3.3.6. Pick up_Forward_Reverse roller

1. Remove the cassette. Stand the machine to see the bottom.
2. Release the Reverse roller Assy by pushing both hooks.



3. Remove 2 screws. Pull and release the Pick-up/Forward roller Assy.



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3.4. Replacing the main SVC parts

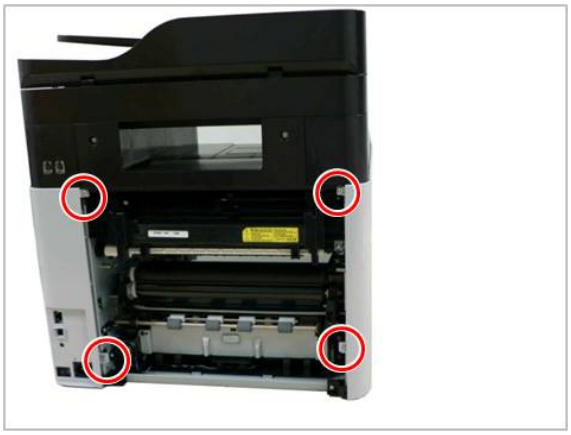
NOTE

Before service, remove all toner cartridges and guide-cartridge.

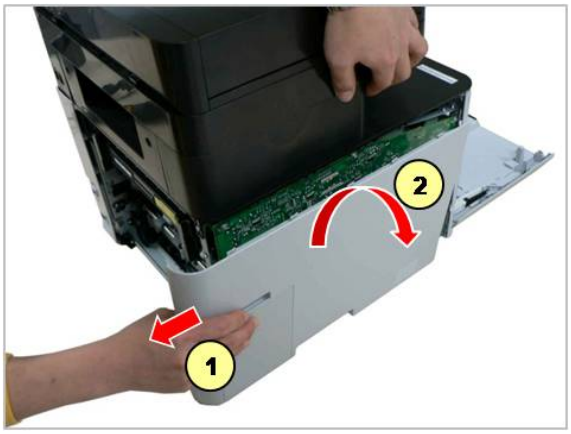
3.4.1. Cover

1. Open and remove the rear cover.

2. Remove 4 screws.

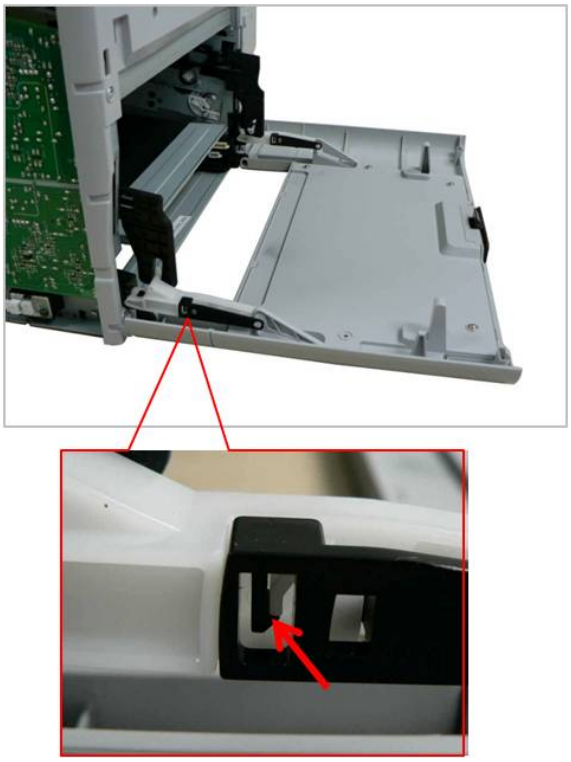


3. Release the left cover by pushing it to the direction of arrow.



4. Release the right cover.

5. Release the hook of the linker. And remove the front cover.



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3.4.2. ADF Unit

1. Open the ADF Unit. Unplug the connector after removing the harness cover.

2. Lift up and release the ADF Unit.

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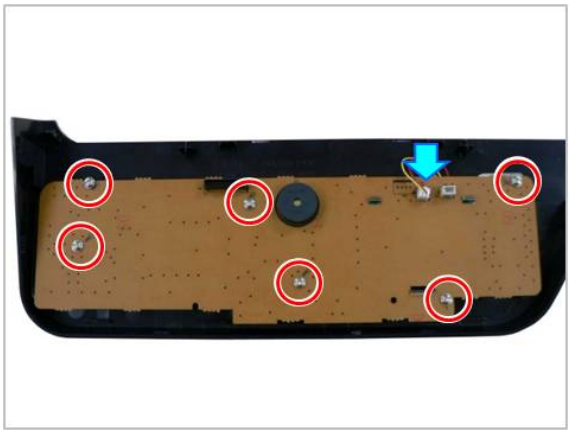
3.4.3. OPE Unit

1. Remove the ADF Unit (Refer to 3.4.2)
2. Turn the OPE Unit over.

3. Unplug 2 connectors. Remove the OPE unit.

4. Unplug 1 connector. Remove 6 screws. And remove the OPE board.



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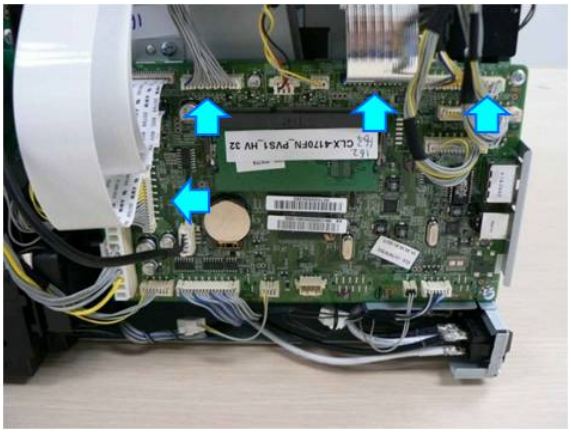
3.4.4. Platen Unit

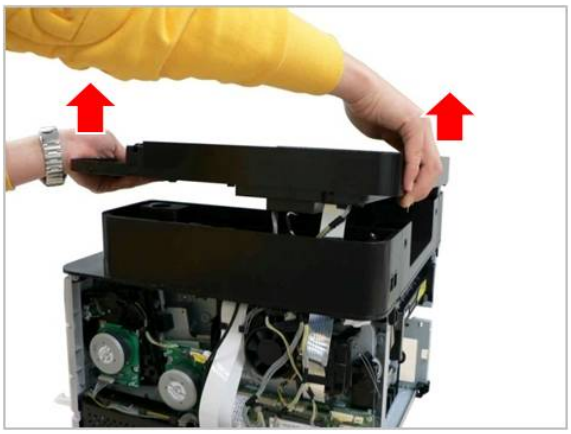
1. Remove the right cover and ADF unit.
2. Remove the hole cap on the platen unit.

3. Remove 5 screws from the top and rear.

4. Unplug the relevant connectors on the main board.



5. Lift the platen unit up.



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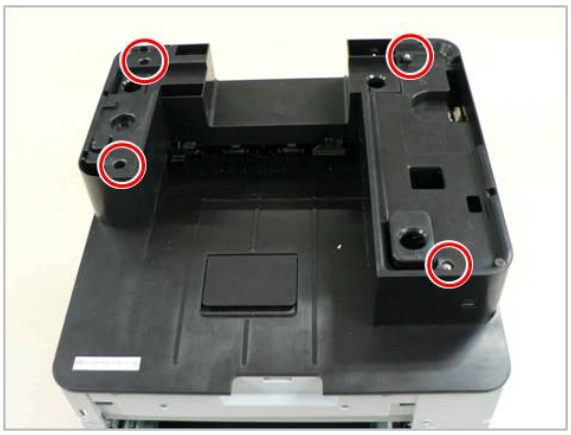
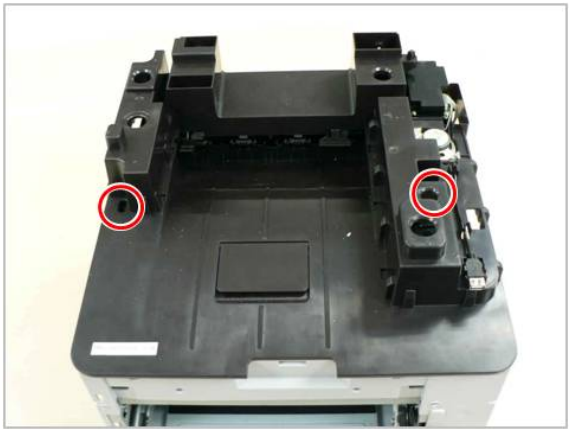
3.4.5. Middle Cover

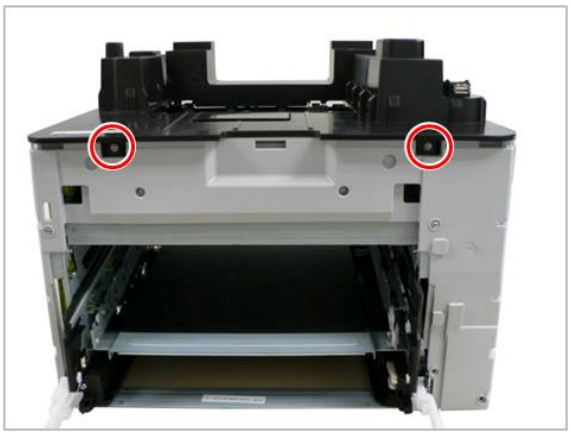
1. Remove the right cover.
2. Remove the ADF unit and OPE unit. (Refer to 3.4.2~3)
3. Remove the Platen Unit. (Refer to 3.4.4)
4. Remove the middle cover dummy R,L after removing 4 screws.



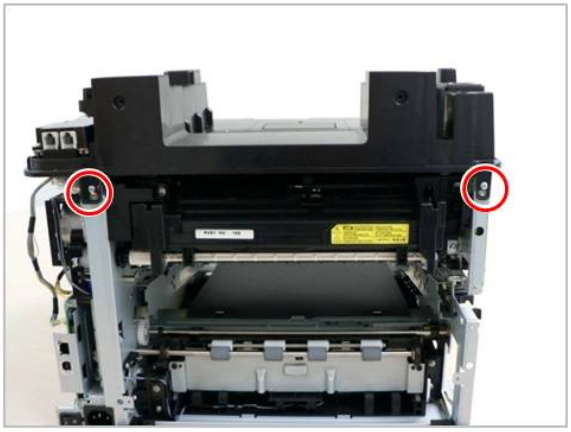
5. Remove 2 screws.



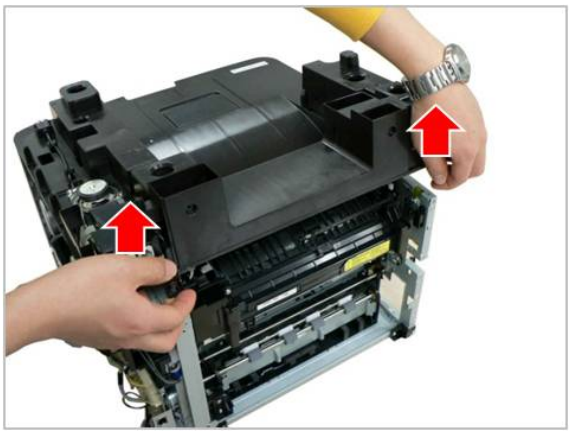
6. Remove 2 screws from the front.



7. Remove 2 screws from the rear.



8. Lift the middle cover up after releasing the rear both hooks.



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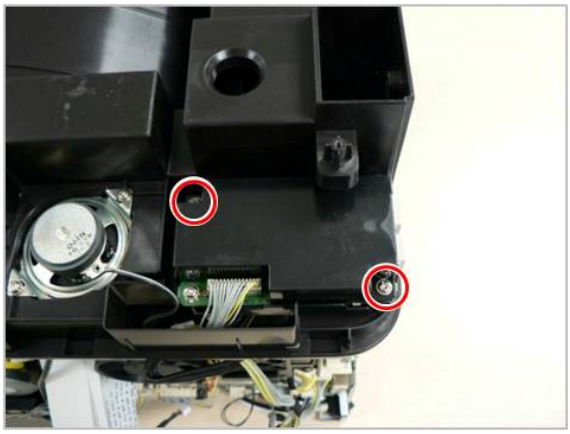
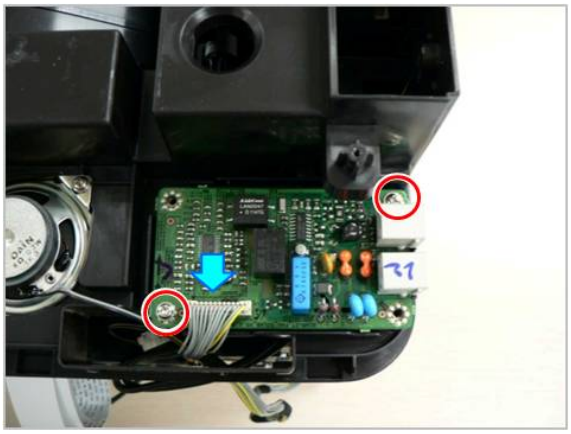
3.4.6. Fax Board

1. Remove the middle cover dummy-right. (Refer to 3.4.5)
2. Remove the fax board cover after removing 2 screws.



3. Remove the fax board after removing 2 screws.



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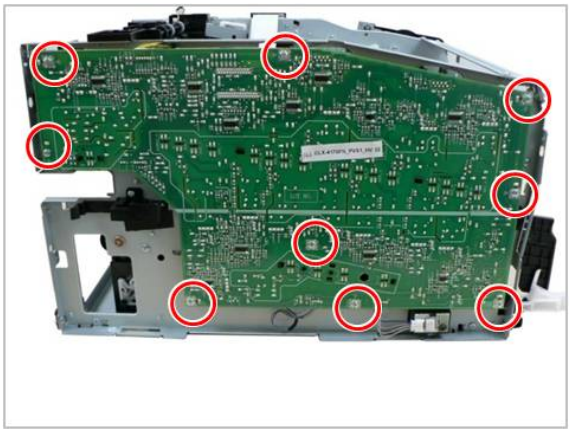
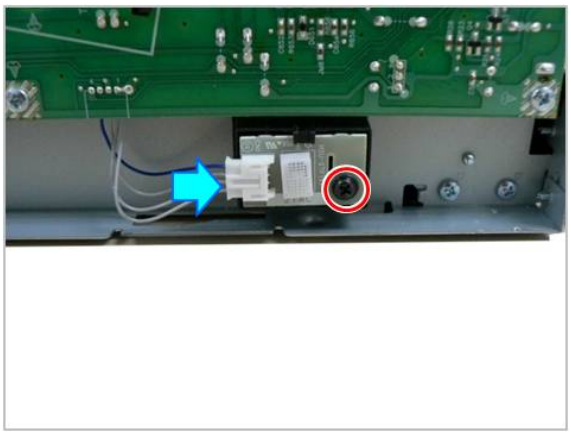
3.4.7. HVPS board

1. Remove the left cover. (Refer to 3.4.1)
2. Remove 9 screws. Unplug the connector. And release the HVPS board.



3.4.8. Outer Temperature Sensor

1. Remove the left cover. (Refer to 3.4.1)
2. Remove 1 screw. Unplug the connector. And remove the sensor.



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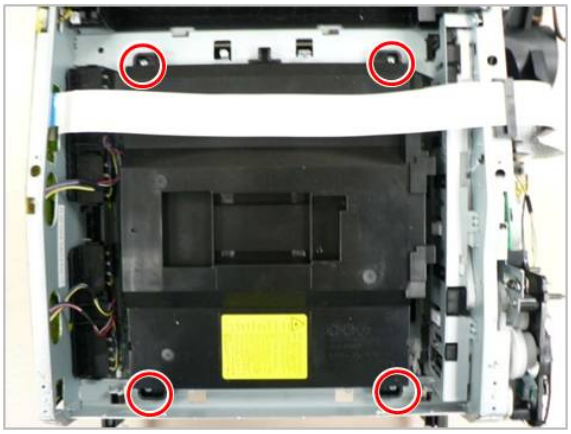
3.4.9. Waste toner container sensor

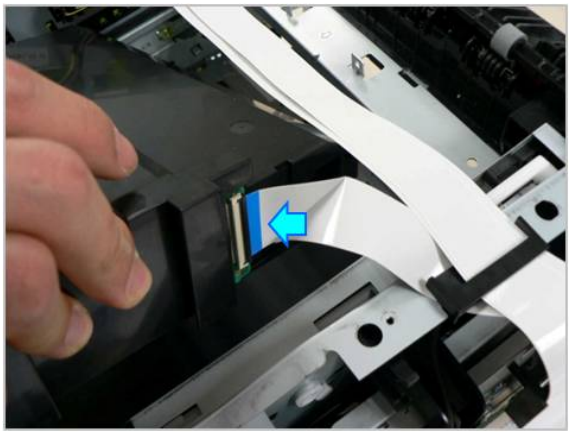
1. Remove the left cover. (Refer to 3.4.1)
2. Release the sensor holder after removing 1 screw.

3.4.10. LSU

1. Remove the middle cover. (Refer to 3.4.5)
2. Remove 4 screws.



3. Unplug the flat cable. Remove the LSU.



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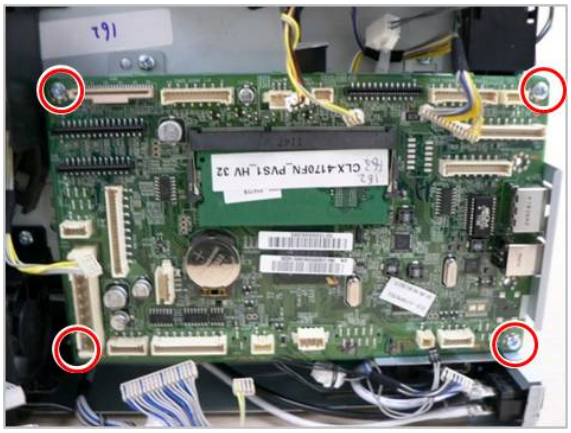
3.4.11. Main Board

1. Remove the right cover. (Refer to 3.4.1)

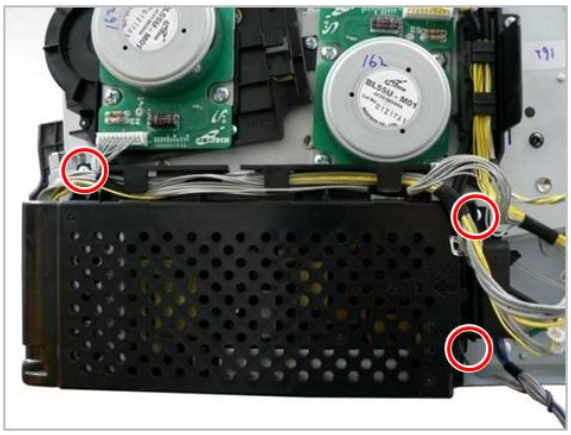
2. Unplug all connector. Remove 4 screws. And remove the main board.



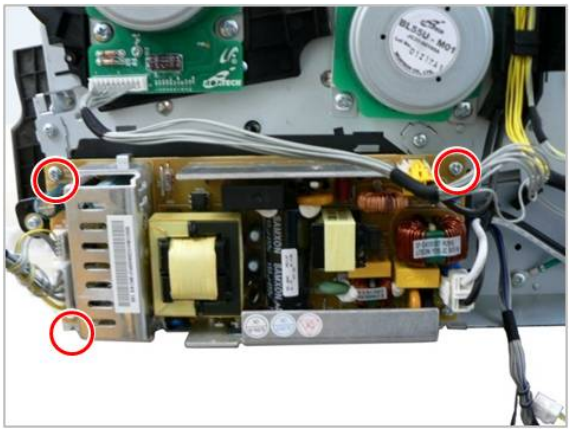
3.4.12. SMPS board

1. Remove the right cover. (Refer to 3.4.1)

2. Remove the SMPS board cover after removing 3 screws.



3. Unplug all connectors on SMPS board. Remove 3 screws. And remove the SMPS board.



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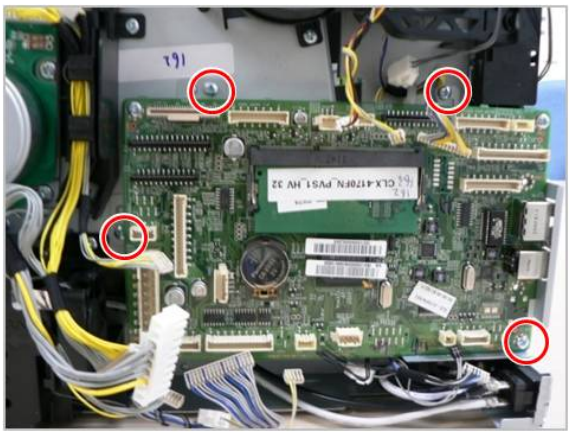
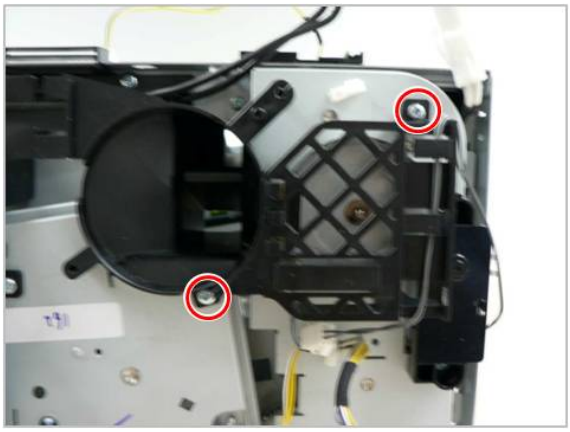
3.4.13. Feed Drive Unit

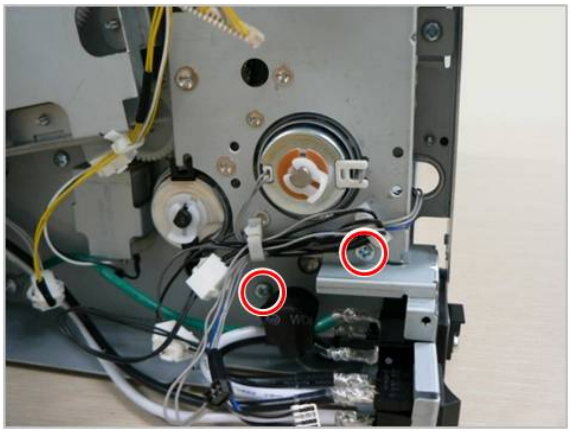
1. Remove the right cover.
2. Unplug all connectors on the main board.
3. Remove the main board bracket after removing 4 screws.



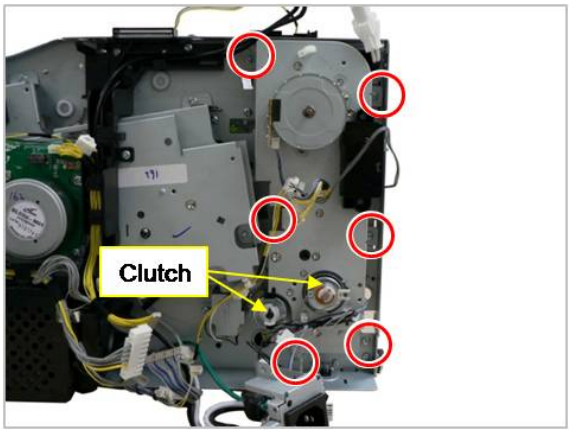
4. Remove the FRAME-FAN after removing 2 screws.



5. Remove the FRAME-INLET after removing 2 screws.



6. Remove 2 clutches after removing each fixer.
7. Remove the Feed Drive Unit after removing 6 screws.



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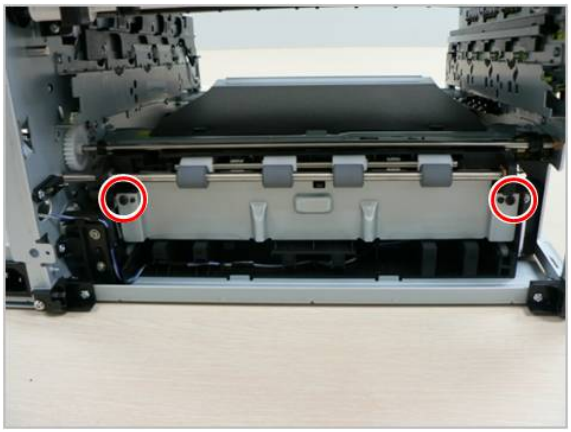
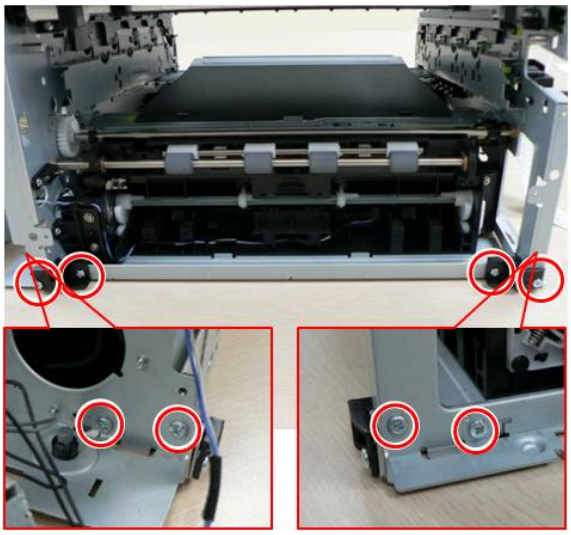
3.4.14. FRAME-RETARD

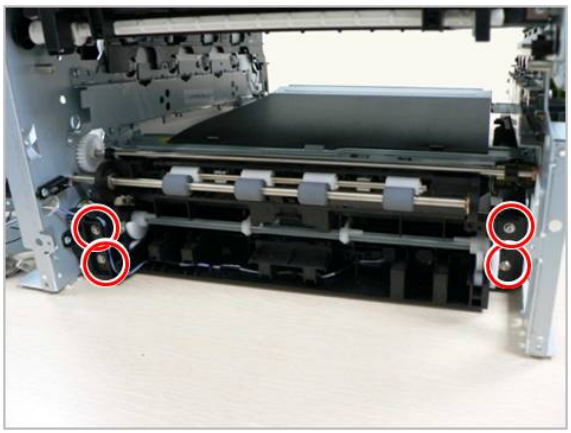
1. Remove the right cover. (Refer to 3.4.1)
2. Remove the main board bracket and FRAME-INLET. (Refer to 3.4.13)
3. Remove the bracket after removing 2 screws.



4. Remove 8 screws. Remove the Rear Hinge R,L and Bottom-Bracket.



5. Remove the FRAME-RETARD after removing 5 screws.



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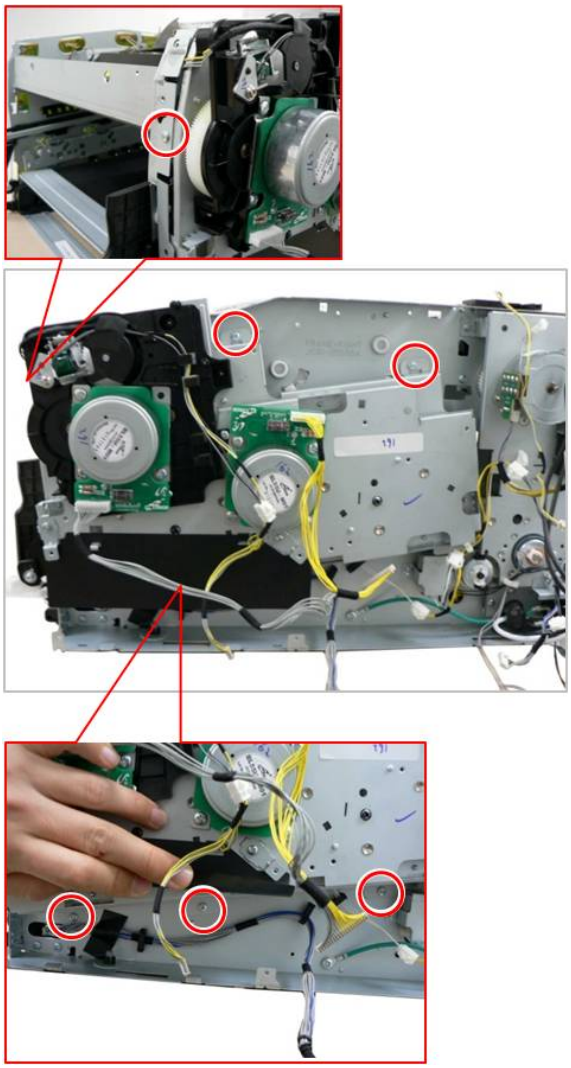
3.4.15. Main Drive Unit

1. Remove the right cover.
2. Remove the SMPS board.
3. Remove the main drive unit.



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4. Alignment and Troubleshooting

4.1. Alignment and Adjustments

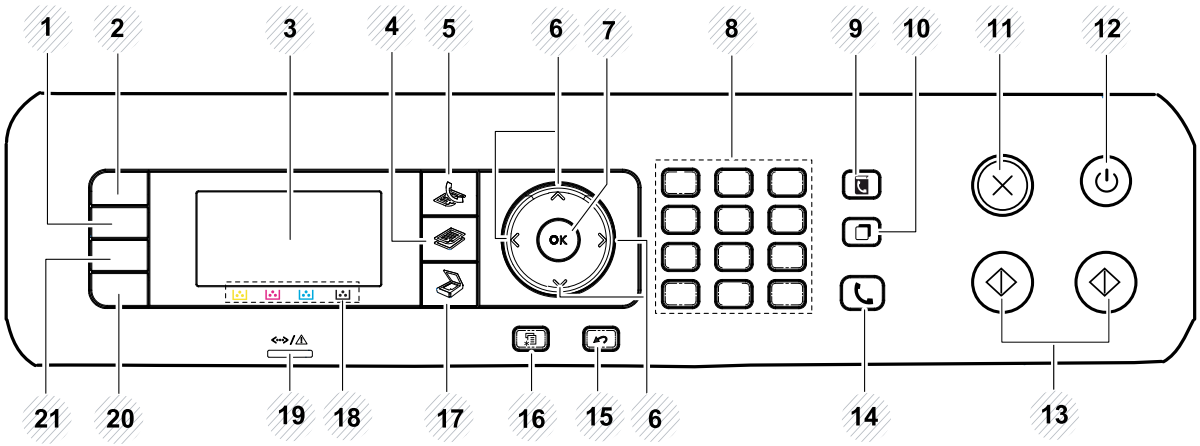
This chapter describes the main functions for service, such as the product maintenance method, the test output related to maintenance and repair, Jam removing method, and so on. It includes the contents of user guide.

4.1.1. Control panel

NOTE

- This control panel may differ from your machine depending on its model. There are various types of control panels.
- Some features and optional goods may not be available depending on model or country.
- Some buttons may not work depending on the mode (copy, fax, or scan).

Type A (CLX-419xN/ CLX-419xFN)



1	Darkness	Adjusts the brightness level to make a copy for easier reading, when the original contains faint markings and dark images.
2	ID Copy*	Allows you to copy both sides of an ID card like a driver's license on a single side of paper.
	Scan to**	Sends scanned data.
3	Display Screen	Shows the current status and prompts during an operation.
4	Fax*	Switches to Fax mode.
5	Copy*	Switches to Copy mode.
6	Arrows	Scroll through the options available in the selected menu, and increase or decrease values.
7	OK	Confirms the selection on the screen.
8	Numeric Keypad	Dials a number or enters alphanumeric characters.
9	Address Book	Allows you to store frequently used fax numbers or search for stored fax numbers.
10	Redial/Pause*	Redials the recently sent fax number or received caller ID in ready mode, or inserts a pause(-) into a fax number in edit mode.

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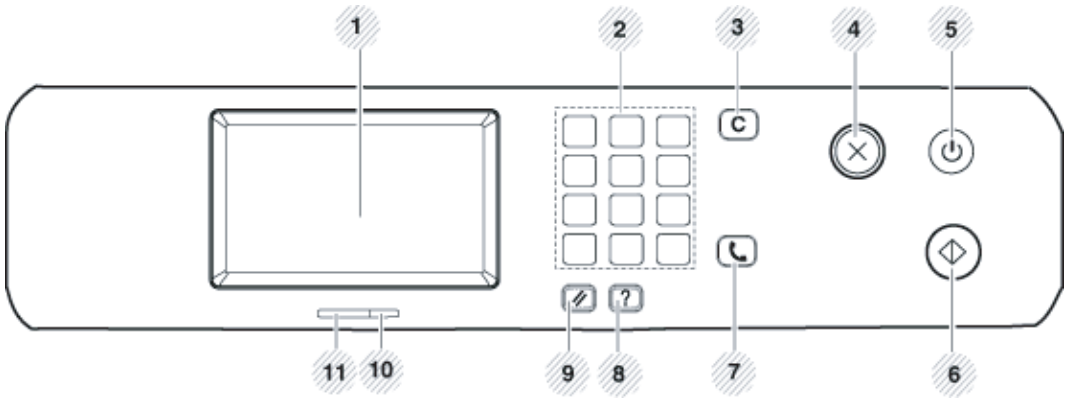
11	Stop/Clear		Stops current operation.
12	Power/Wake up		Turns the power on or off, or wakes up the machine from the power save mode. If you need to turn the machine off, press this button for more than three seconds.
13	Start	Color	Begins a printing job in color mode.
		Black	Begins a printing job in black and white mode.
14	On Hook Dial*		When you press this button, you can hear a dial tone. Then enter a fax number. It is similar to making a call using speaker phone.
15	Back		Sends you back to the upper menu level.
16	Menu		Enters Menu mode and scrolls through the available menus.
17	Scan*		Switches to Scan mode.
18	Toner Colors		Show the status of each toner cartridge. If the toner cartridge is low or needs to be replaced, the Status LED turns red and the display shows the message. However, the arrow mark shows which color toner is of concern or may be installed with a new cartridge.
19	Status LED		Indicates the status of your machine.
20	Eco		Turn into eco mode to reduce toner consumption and paper usage when pc-printing and copying only.
21	Direct USB		Allows you to directly print files stored on a USB memory device when it is inserted into the USB port on the front of your machine.

* CLX-419xFN series only.

** CLX-419xN series only.

Type B (CLX-419xFW)



1	Display screen	Shows the current status and displays prompts during an operation.
2	Numeric keypad	Dials a number or enters alphanumeric characters.
3	Clear	Deletes characters in the edit area.
4	Stop/Clear	Stops an operations at any time.
5	Power/Wake up	Turns the power on or off, or wakes up the machine from the power save mode. If you need to turn the machine off, press this button for more than three seconds.
6	Start	Starts a job in black or color mode.
7	On Hook Dial	When you press this button, you can hear a dial tone. Then enter a fax number. It is similar to making a call using speaker phone
8	Help	Gives detailed information about this machine's menus or status.

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9	Reset	Resets the current machine's setup.
10	Wireless LED	Shows the current status of the wireless network connection.
11	Status LED	Indicates the status of your machine.

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4.1.2. Understanding the status LED

The color of the LED indicates the machine's current status.

NOTE

- Some LEDs may not be available depending on model or country.
- To resolve the error, look at the error message and its instructions from the troubleshooting part.
- You also can resolve the error with the guideline from the computers's Samsung Printing Status window.

LED	Status		Description
Status	Off		The machine is off-line.
	Green	Blinking	When the backlight blinks, the machine is receiving or printing data.
		On	• The machine is on-line and can be used.
	Red	Blinking	• A minor error has occurred and the machine is waiting for the error to be cleared. Check the display message. When the problem is cleared, the machine resumes. • Small amount of toner is left in the cartridge. The estimated cartridge life* of toner is close. Prepare a new cartridge for replacement. You may temporarily increase the printing quality by redistributing the toner.
		On	• A toner cartridge has almost reached its estimated cartridge life*. It is recommended to replace the toner cartridge. • The cover is opened. Close the cover. • There is no paper in the tray. Load paper in the tray. • The machine has stopped due to a major error. • A paper jam has occurred.
Wireless**	Blue	Blinking	The machine is connecting to a wireless network.
		On	The machine is connected to a wireless network.
		Off	The machine is disconnected from a wireless network.
Power/Wake up	Blue	On	The machine is in power save mode.
		Off	The machine is in ready mode or machine's power is off.
Eco	Green	On	Eco mode is on.
		Off	Eco mode is off.

* Estimated cartridge life means the expected or estimated toner cartridge life, which indicates the average capacity of print-outs and is designed pursuant to ISO/IEC 19798. The number of pages may be affected by operating environment, percentage of image area, printing interval, graphics, media and media size. Some amount of toner may remain in the cartridge even when red LED is on and the printer stops printing.

** Some LEDs may not be available depending on model or country.

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4.1.3. JAM removal

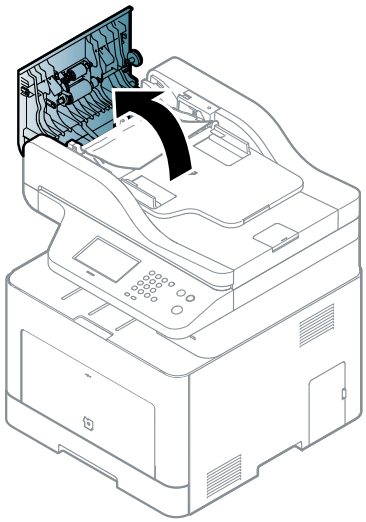
4.1.3.1. Clearing original document jams

NOTE

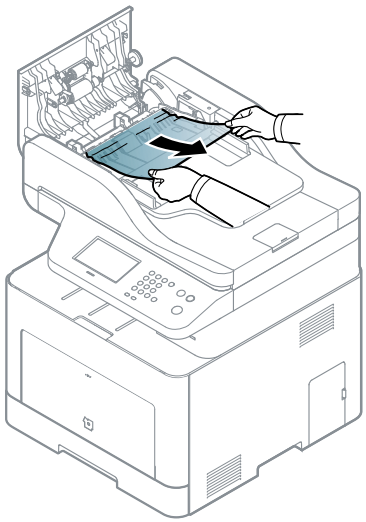
This troubleshooting may not be available depending on model or optional goods

Original paper jam in front of scanner

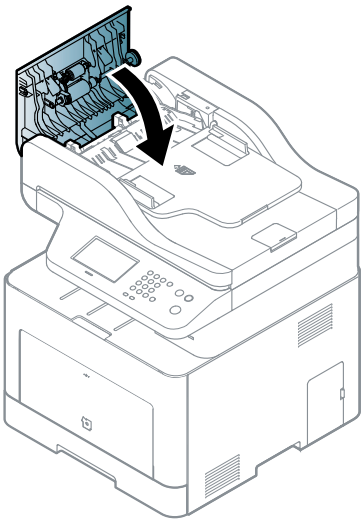
1) Open the document feeder cover.



2) Gently remove the jammed paper from the document feeder.



3) Close the document feeder cover.



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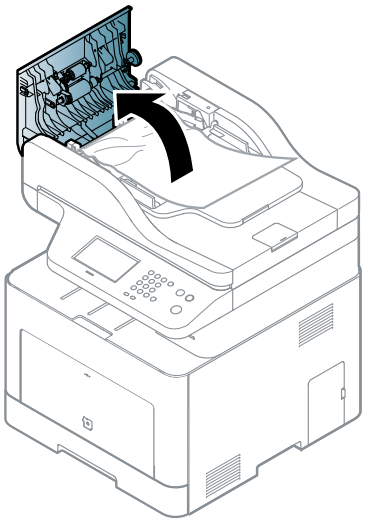
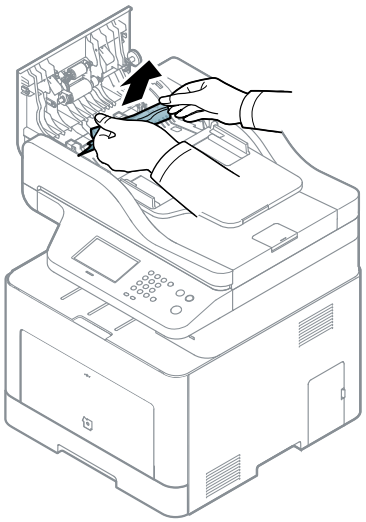
Original paper jam inside of scanner

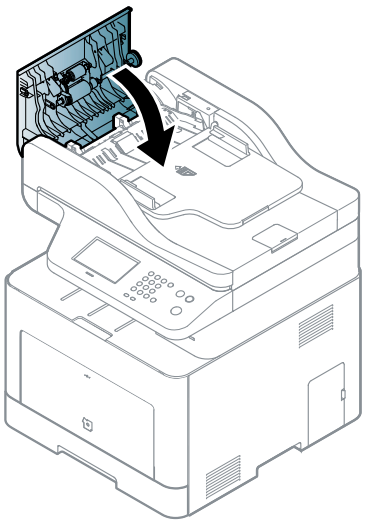
1) Open the document feeder cover.



2) Gently remove the jammed paper from the document feeder.



3) Close the document feeder cover.



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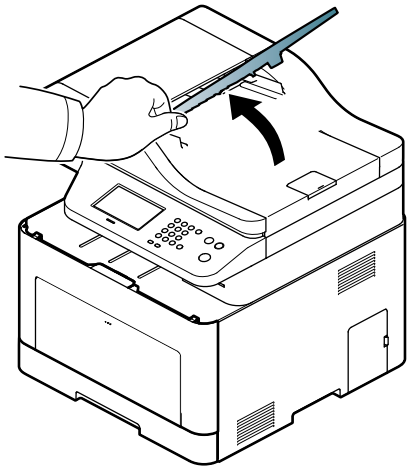
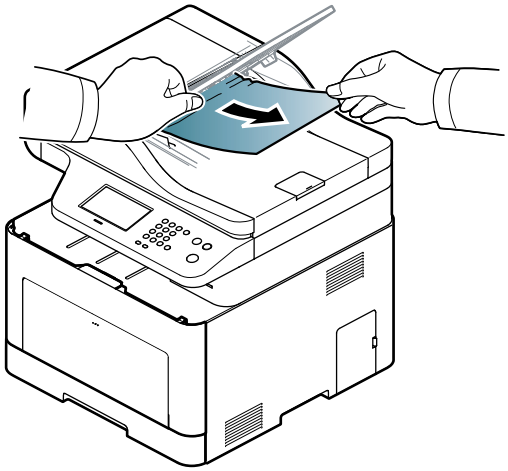
Original paper jam in exit area of scanner

1) Remove any remaining pages from the document feeder.

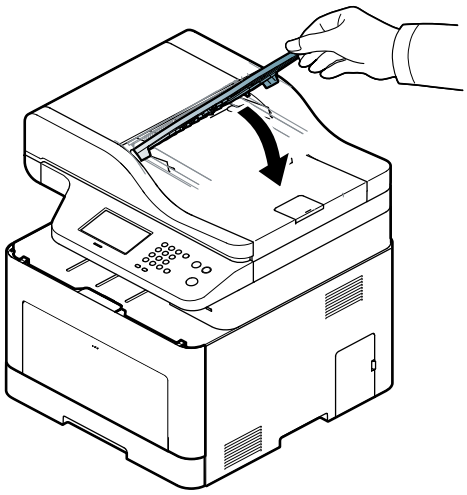
2) Open the Stacker up.



3) Gently remove the jammed paper from the document feeder.



4) Close the Stacker.



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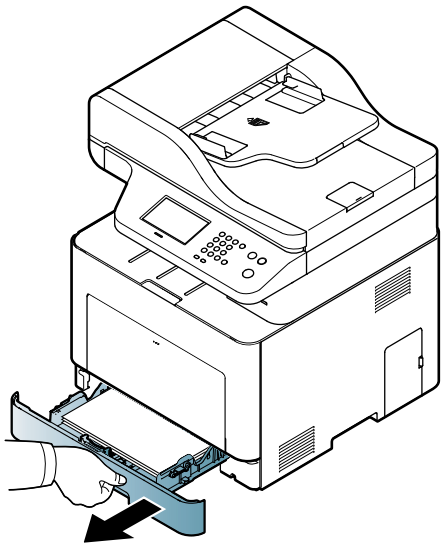
4.1.3.2. Clearing paper jams

NOTE

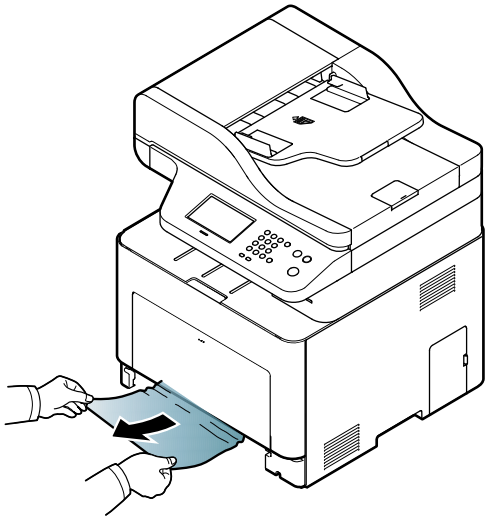
To avoid tearing the paper, pull the jammed paper out slowly and gently.

In tray1

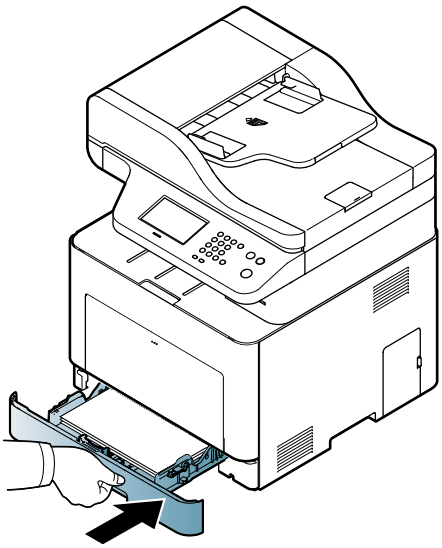
1) Take off the cassette.



2) Remove the jammed paper by gently pulling it straight out.



3) Reinstall the cassette.



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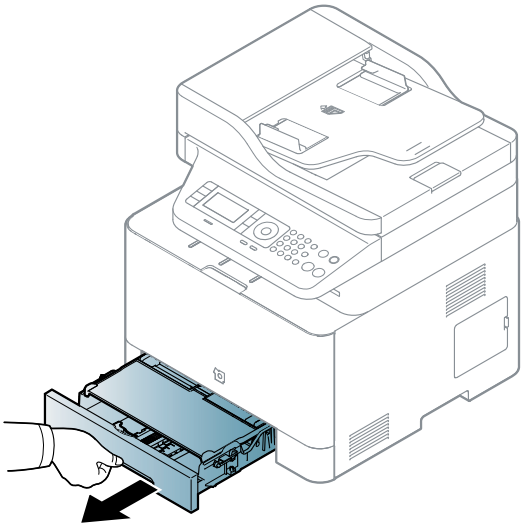
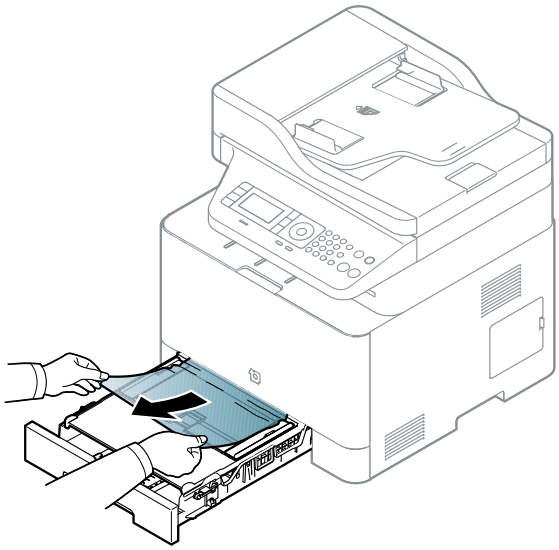
In the manual feeder/multi-purpose tray

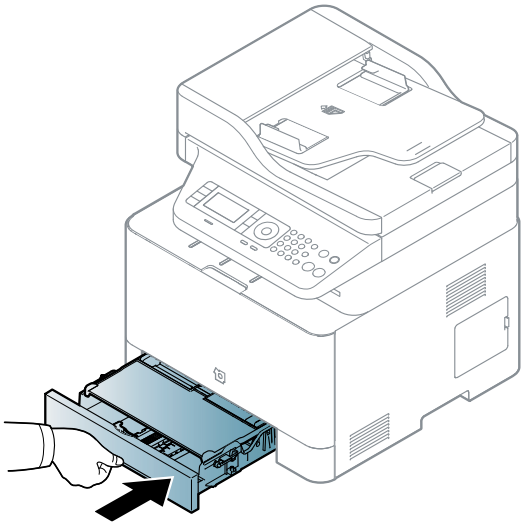
1) Take off the cassette.



2) Remove the jammed paper by gently pulling it straight out.



3) Reinstall the cassette.



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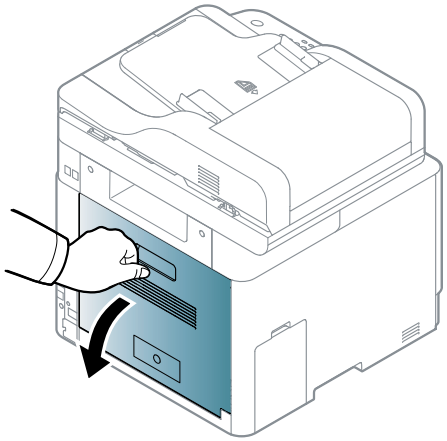
Inside the machine

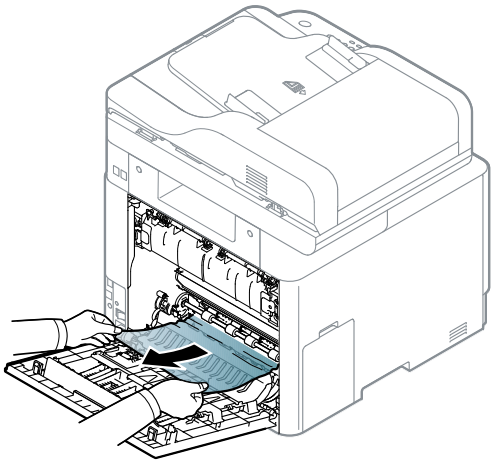
CAUTION

The fuser area is hot. Take care when removing paper from the machine.

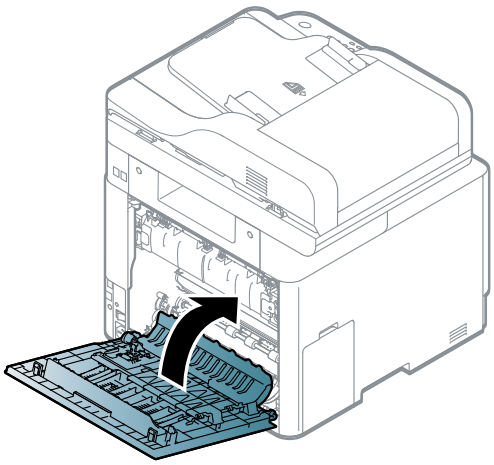
1) Open the rear cover.



2) Remove the jammed paper by gently pulling it straight out.



3) Close the rear cover.



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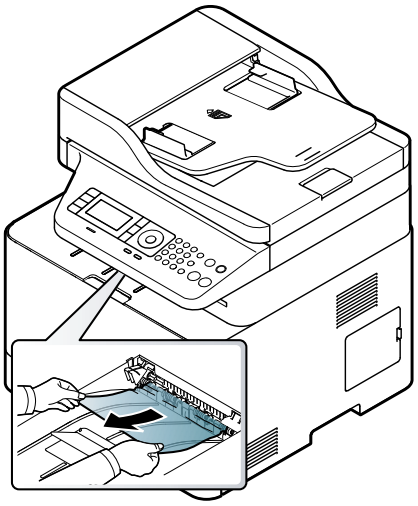
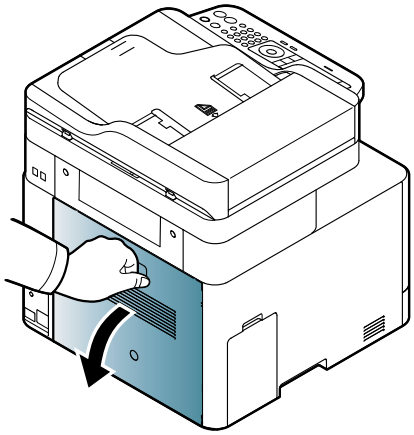
In the exit area

1) Remove the jammed paper by gently pulling it straight out.

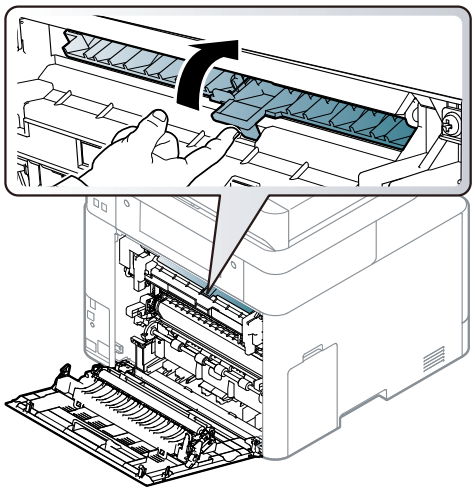


If you do not see the paper in this area, stop and go to next step:

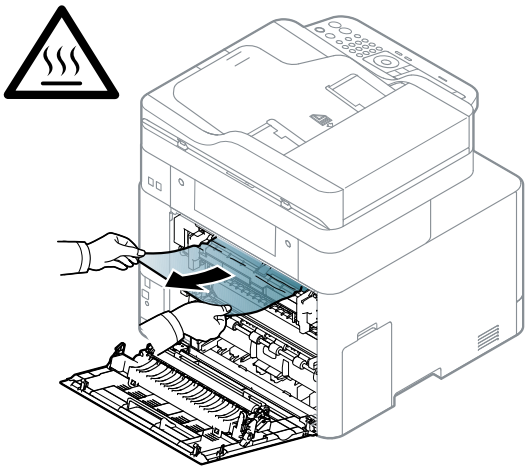
2) Open the rear cover.



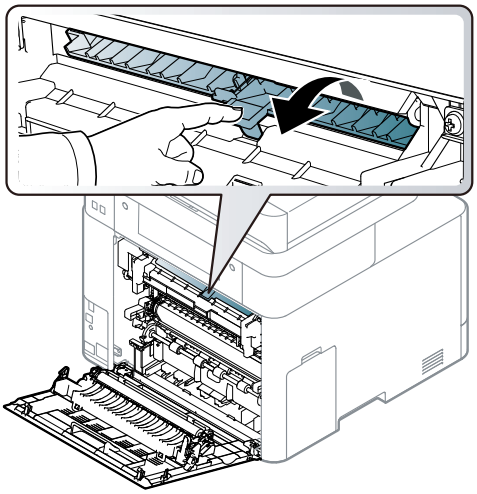
3) Open the fuser jam cover.



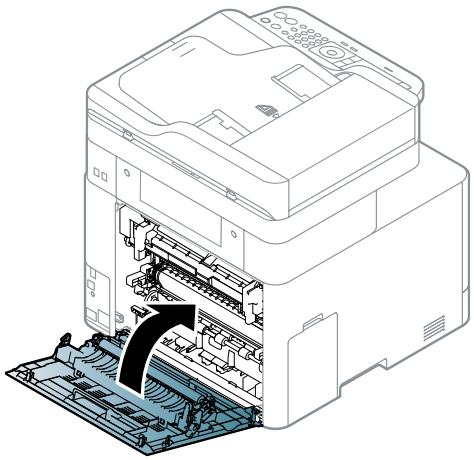
4) Remove the jammed paper by gently pulling it straight out.



5) Close the fuser jam cover.



6) Close the rear cover.



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4.1.4. Useful menu item for service

1) Monitoring the supplies life

If you experience frequent paper jams or printing problems, check the number of pages the machine has printed or scanned. Replace the corresponding parts, if necessary.

NOTE

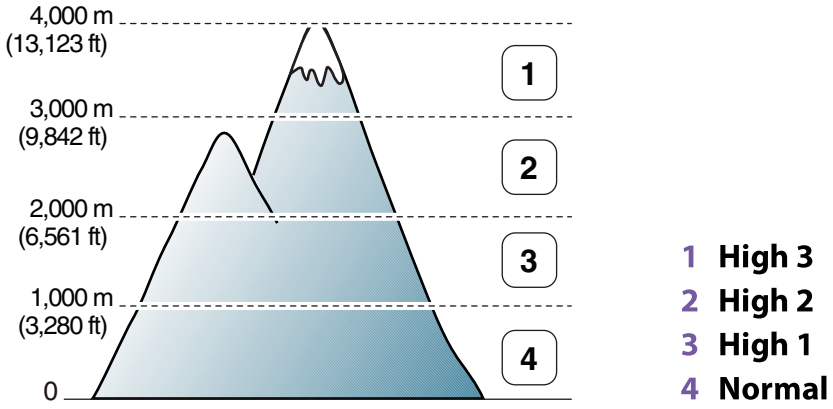
- Accessing menus may differ from model to model
- It may be necessary to press OK to navigate to lower-level menus for some models.

1) Select "**Menu > System Setup > Maintenance > Supplies Life**" on the control panel.
2) Select the option you want and press OK.
   - Supplies Info.: Prints the supply information page.
   - Total: Displays the total number of pages printed.
   - ADF Scan: Displays the number of pages printed by using the document feeder.
   - Platen Scan: Displays the number of pages scanned by using scanner glass.
   - Transfer Belt: Displays the number of pages by using transfer belt.
   - Fuser: Displays the number of pages by using fuser.
   - Tray1 Roller: Displays the number of pages by using tray1 roller.
3) Press "**Stop/Clear**" button to return to ready mode.

2) Altitude adjustment

Print quality is affected by atmospheric pressure, which is determined by the height of the machine above sea level. The following information will guide you on how to set your machine for the best print quality.

Before you set the altitude value, determine the altitude where you are.



You can set the altitude value from Device Settings in Samsung Easy Printer Manager program.

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- For Windows and Macintosh users, you set from **Samsung Easy Printer Manager > Switch to advanced mode > Device Settings.**

NOTE

- If your machine is connected to the network, you can set the altitude via SyncThru™ Web Service.
- You can also set the altitude in System Setup option on the machine's display.
  - Menu > System Setup > Machine Setup > Altitude Adjustment (CLX-4195N / 4195FN)
  - Setup > Altitude Adjustment (CLX-4195FW)

3) Checking the firmware version

This menu shows the product's firmware version.

Select the menu item.

- Press "**Setup > Machine Setup > Next > Initial Setup > Firmware Version**" on the touch screen. (CLX-4195FW)

4) Auto Color Reg.

The machine virtually prints certain patterned image to calibrate the color printing position. This feature enhances the colored image sharper and clearer, which means the machine prints the colored image on the paper more like the one in the monitor.

NOTE

If you have moved the machine, it is strongly recommended to operate this menu manually.

Select the menu item.

- Press "**Setup > Machine Setup > Auto CR**" on the touch screen. (CLX-4195N/ 4195FN)
- Or press "**Setup > Machine Setup > Next > Initial Setup > Auto CR**" on the touch screen. (CLX-4195FW)

5) Printing a machine report

This product provides several printable reports for maintenance purposes.

These reports can be used to aid the diagnosis of print quality problems.

To print the report :

- Press "**Menu > System Setup > Report**" on the control panel. (CLX-4195N/ 4195FN)
- Or press "**Setup > Machine Setup> Next > Reports**" on the touch screen. (CLX-4195FW)

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4.1.5. Periodic Defective Image

If an image defects appears at regular intervals on the printed-paper, it is due to a faulty or damaged roller. Refer to the table below and check the condition of the appropriate roller.

	Roller	Period	Period	Phenomenon	Defective part
1	Pressure Roller	20 mm	62.8 mm	Background	Fuser Unit
2	Heat Roller	24.3 mm	76.3 mm	Black spot and image ghost	
3	Charging Roller	8.5 mm	26.7 mm	Black Spot and line and periodic band	Toner Cartridge
4	OPC Drum	24 mm	75.4 mm	White and Black Spots	
5	Developing Roller	12 mm	37.7 mm	White spot, Horizontal black band	
6	Supply Roller	11.3 mm	35.5 mm	Periodic Band by little difference of density	
7	Transfer Roller	8 mm	25.1 mm	Ghost, Damaged image by abnormal transfer	Transfer roller

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4.1.6. Useful management tools

4.1.6.1. Using Samsung Easy Printer Manager (Windows and Macintosh only)

NOTE

- This feature may not be available depending on model or optional goods.
- Available for Windows or Macintosh OS users only.
- For Windows, Internet Explorer 6.0 or higher is the minimum requirement for Samsung Easy Printer Manager.

Samsung Easy Printer Manager is an application that combines Samsung machine settings into one location. Samsung Easy Printer Manager combines device settings as well as printing environments, settings/actions and launching. All of these features provide a gateway to conveniently use your Samsung machine. Samsung Easy Printer Manager provides two different user interfaces for the user to choose from: the basic user interface and the advanced user interface. Switching between the two interfaces is easy: just click a button.

Understanding Samsung Easy Printer Manager

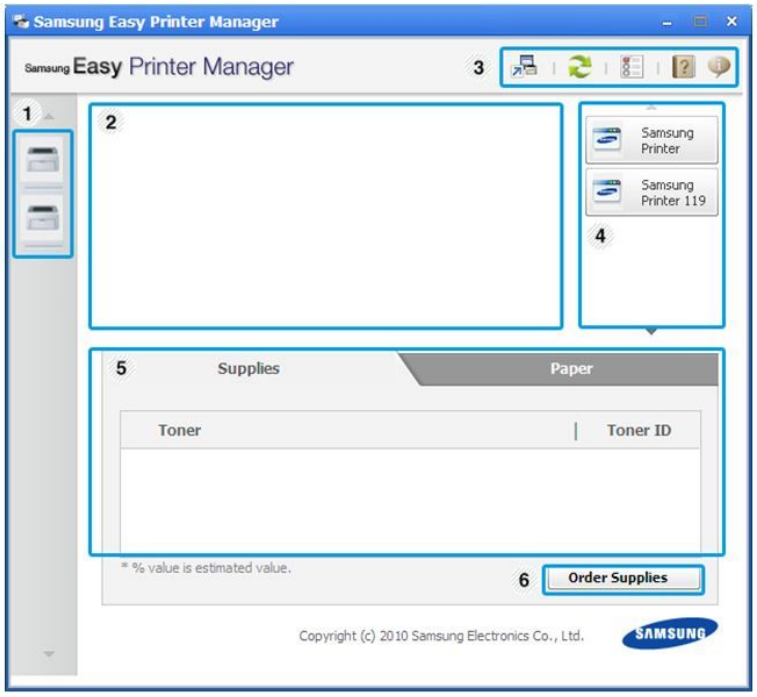
To open the program:

- For Windows, Select Start > Programs or All Programs > Samsung Printers > Samsung Easy Printer Manager > Samsung Easy Printer Manager.
- For Macintosh, Open the Applications folder > Samsung folder > Samsung Easy Printer Manager.

The Samsung Easy Printer Manager interface is comprised of various basic sections as described in the table that follows:

NOTE

The screenshot may differ depending on operating system you are using.



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No	Area	Description
1	Printer List	The printer list displays the installed printer icons on your computer.
2	Printer Information	This area gives you general information about your machine. You can check information, such as the machine's model name, IP address (or Port name), and machine status. **NOTE** Troubleshooting button: This button opens Troubleshooting Guide when an error occurs. You can directly open the necessary section in the user's guide.
3	Application Information	Includes links for changing to the advanced settings, preference, help, and about.
4	Quick links	Displays Quick links to machine specific functions. This section also includes links to applications in the advanced settings.
5	Contents Area	Displays information about the selected machine, remaining toner level, and paper. The information will vary based on the machine selected. Some machines do not have this feature.
6	Order Supplies	Click on the Order button from the supply ordering window. You can order replacement toner cartridge(s) from online.

Advanced settings user interface overview

The advanced user interface is intended to be used by the person responsible for managing the network and machines.

- **Device Settings**

  You can configure various machine settings such as machine setup, paper, layout, emulation, network, and print information.

- **Scan to PC Settings**

  This menu includes settings to create or delete scan to PC profiles.
  - **Scan Activation** : Determines whether or not scanning is enabled on the device.
  - **Profile** : Displays the scanning profiles saved on the selected device.
  - **Basic tab** : Contains settings related general scan and device settings.
  - **Image tab** : Contains settings related to image altering.

- **Fax to PC settings**

  This menu includes settings related to the basic fax functionality of the selected device.
  - **Disable** : If Disable is On, incoming faxes will not be received on this device.
  - **Enable Fax Receiving from Device** : Enables faxing on the device and allow more options to be set.

- **Alert Settings**

  This is menu includes settings related to error alerting.
  - **Printer Alert** : Provides settings related to when alerts will be received.
  - **Email Alert** : Provides options relating to receiving alerts via email.
  - **History Alert** : Provides a history of device and toner related alerts.

- **Job Accounting**

  Provides querying of quota information of the specified job accounting user. This quota information can be created and applied to devices by job accounting software such as SyncThru™ or CounThru™ admin software.

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4.1.6.2. Using Samsung Printer Status (Windows only)

The Samsung Printer Status is a program that monitors and informs you of the machine status.

NOTE

- The Samsung Printer Status window and its contents shown in this user's guide may differ depending on the machine or operating system in use.
- Check the operating system(s) that are compatible with your machine.

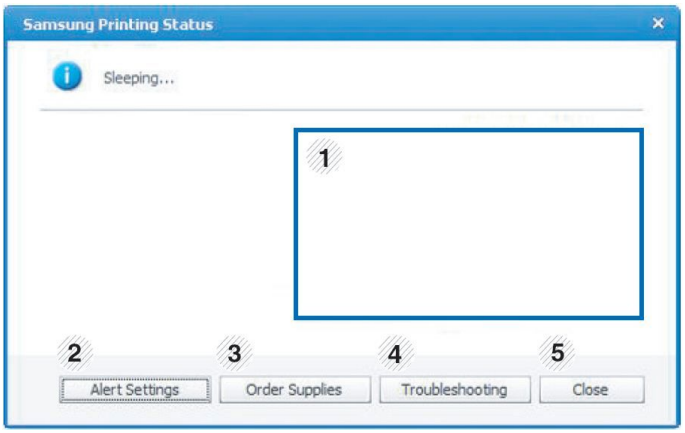
Samsung Printer Status overview

If an error occurs while operating, you can check the error from the Samsung Printer Status. Samsung Printer Status is installed automatically when you install the machine software.

You can also launch Samsung Printer Status manually. Go to the **Printing Preferences** , click the **Basic** tab > **Printer Status** button.

These icons appear on the Windows task bar:

Icon	Mean	Description
	Normal	The machine is in ready mode and experiencing no errors or warnings.
	Warning	The machine is in a state where a soft error has occurred. For example, a toner low status, which may lead to toner empty status.
	Error	The machine has at least one hard error, such as out of paper, fuser error, etc. Machine does not have ability to come to ready without customer intervention.



1	Toner Level	You can view the level of toner remaining in each toner cartridge. The machine and the number of toner cartridge(s) shown in the above window may differ depending on the machine in use. Some machines do not have this feature.
2	Alert Settings	Select the settings you want from the options window.
3	Order Supplies	You can order replacement toner cartridge(s) from online.
4	Troubleshooting	You can directly open the troubleshooting section in the user's guide.
5	Close	Close the window.

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4.1.6.3. Using SyncThru Web Service (SWS)

SWS is an embedded web server in the machine. This web server informs you of machine configuration, version, status and allows you to customize the machine's settings. You can contact this server via wired and wireless network using your web browser in the remote place.

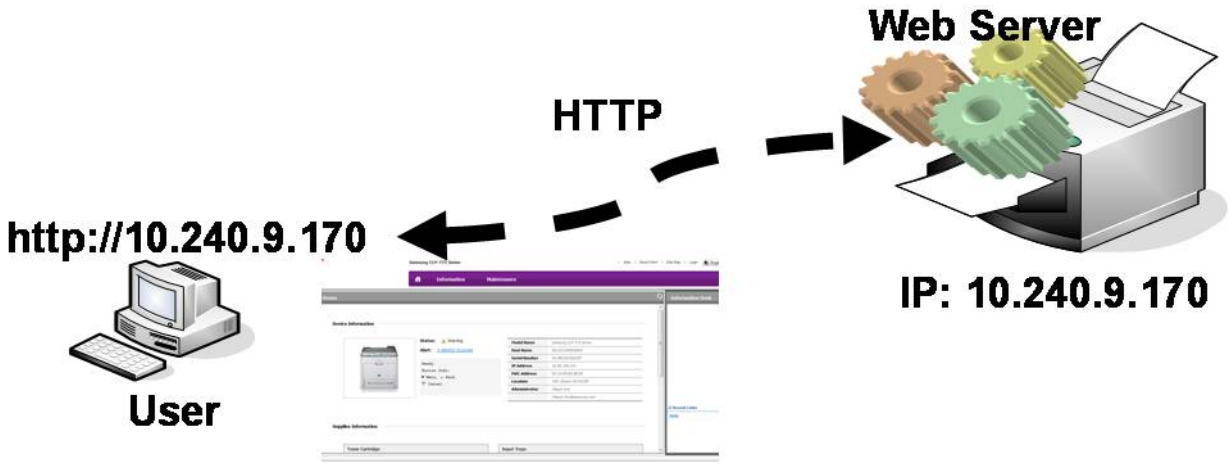
Connecting preparations

- Wired or Wireless Network connection is established.
- Browser (Ex> Internet Explorer) Program on your PC network connected

SWS overview

SyncThru Web Service (SWS)

- accepts HTTP request via port 80 as normal web servers.
- provides interface to users information of networked printers and allow to configure the setting of printers.
- is able to provide more complicated options than Local UI for printer configuration.



Connection Procedure

1) Open the Web-browser and input IP address of machine. Click "Login".
2) Log-in Admin Mode. (ID: admin, PW: sec00000)
3) Select pages to check the configuration and customize the settings.

CAUTION

Please, change SWS Default ID and Password for system security in case of your first connection.

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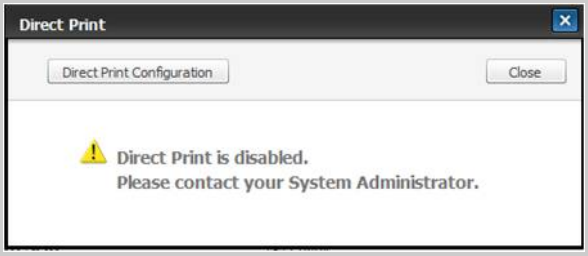
NOTE

If the machine supports 'Direct Print', you can enable this function using the SWS menu. The default configuration is 'Disabled' for your security.

Firstly, you have to login to SWS.

1) Click 'Direct Print Configuration' in the pop up windows when clicking 'Direct Print'.

2) In the 'Services' Menu, check 'Direct Print'.



Or,

1) Click 'System Security' in the 'Security' menu.

2) Select 'Feature Management' in the left frame.

3) In the 'Services' Menu, check 'Direct Print'.

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4.1.7. Updating Firmware

This chapter includes instructions for updating the printer firmware. You can update the printer firmware by using one of the following methods :

- Update the firmware by using the USB port.
- Update the firmware by using the Network.

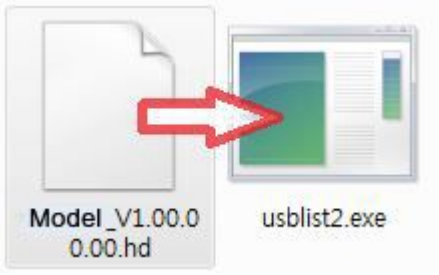
4.1.7.1. Update the firmware by using the USB port

Upgrading preparations

- usblist2.exe : Tool which sends firmware data to printer.
- Firmware file to update.

Upgrade Procedure

1) Turn the machine off.
2) Connect USB cable to printer.
3) Turn the machine on. Check if the printer is the ready status.
4) Drag the firmware file and Drop down on the usblist2.exe.



And then firmware update will be started automatically.

5) When upgrading is completed, machine is automatically re-booting.

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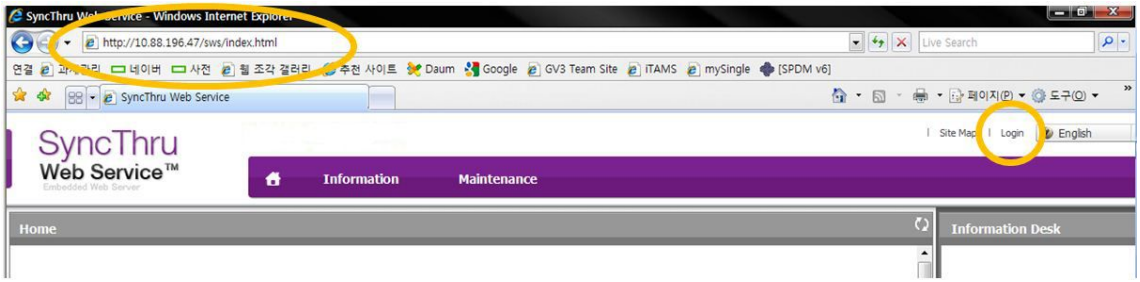
4.1.7.2. Update the firmware by using the network

Upgrading preparations

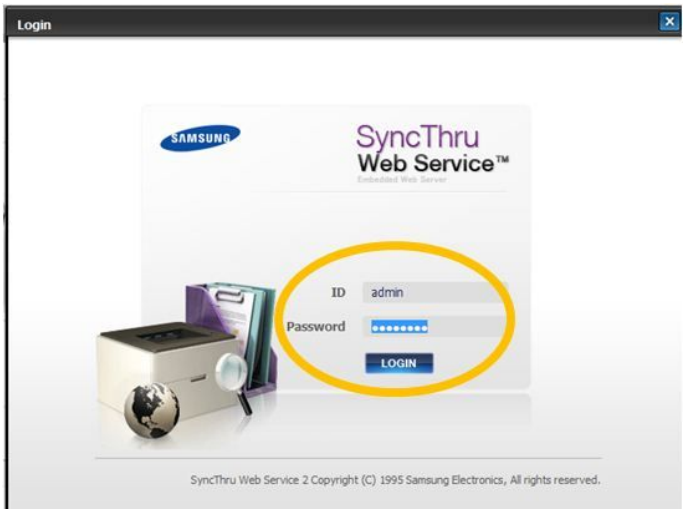
- Wired or Wireless Network connection is established.
- Firmware file to update

Upgrade Procedure

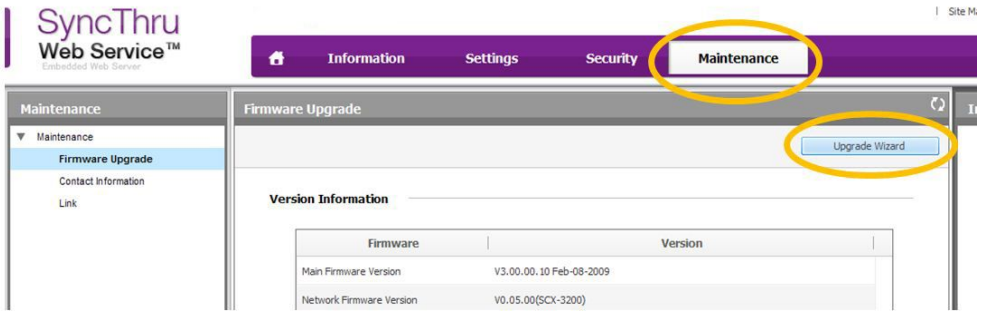
1) Open the Web-browser and input IP address of machine. Click “Login”.



2) Log-in Admin Mode. (ID: admin, PW: sec00000)



3) Select Maintenance menu and click “upgrade wizard”



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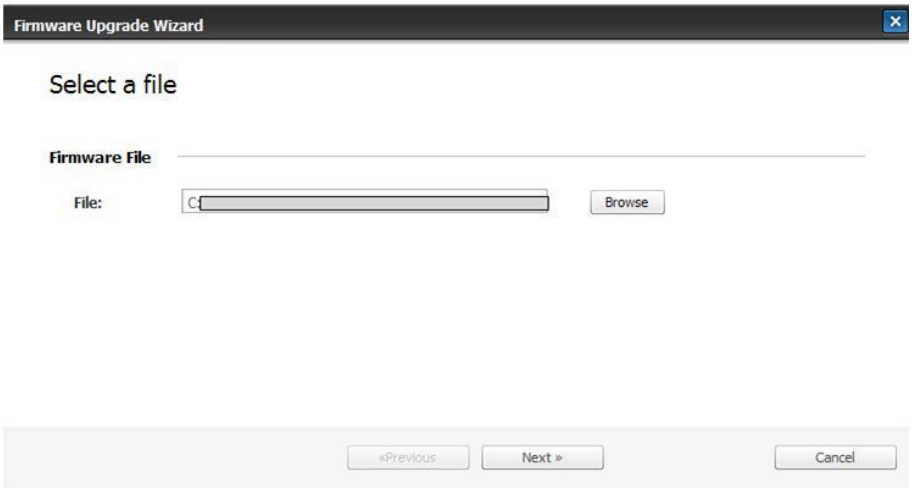
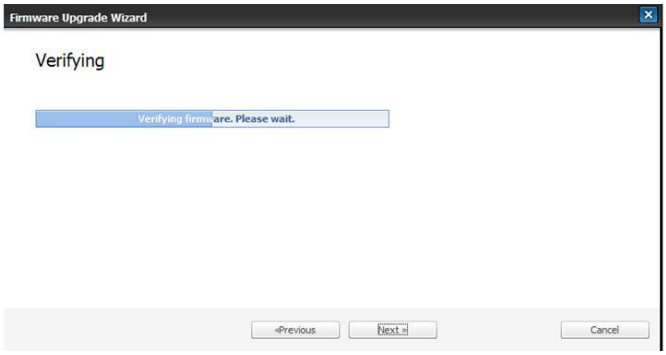
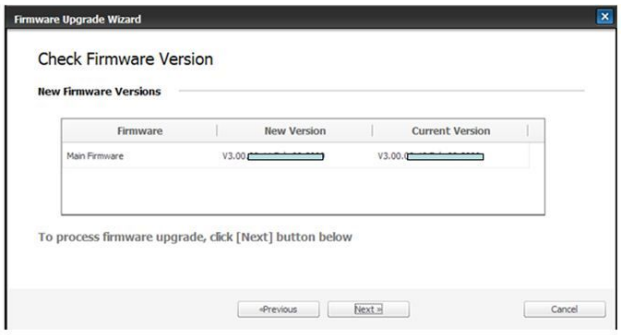
4) Select firmware file using “browser” button and press next button.

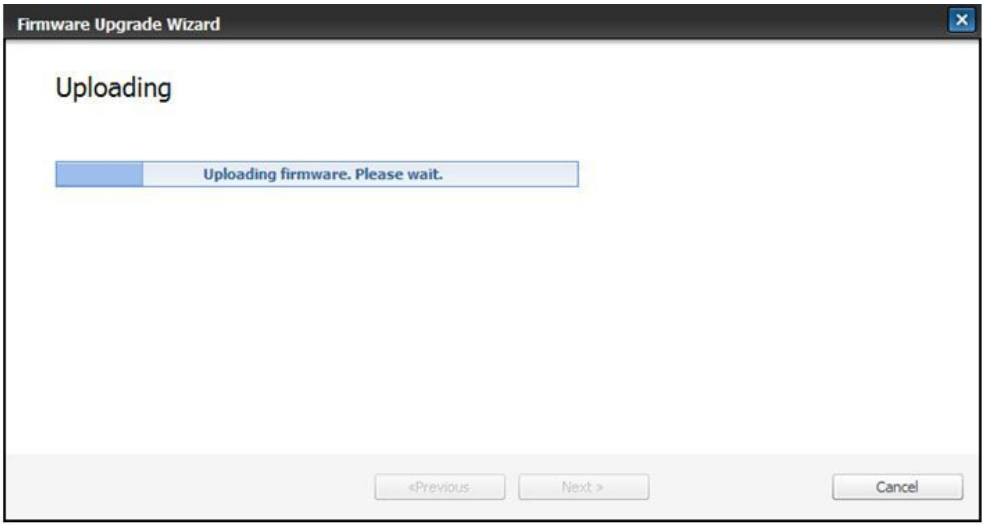


5) SyncThru will check verify firmware file and compare version and press next button.





6) Machine starts upgrading. SyncThru will return home page after upgrading is completed.



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4.1.8. Tech Mode (Diagnostic Mode)

In service (tech) mode, the technician can check the machine and perform various test to isolate the cause of a malfunction. While in Tech mode, the machine still performs all normal operations.

4.1.8.1. Tech Mode (CLX-4195N_4195FN)

a) Entering Tech Mode

1) Press “Menu > # > 1 > 9 > 3 > 4 ” on the control panel continuously.

2) Press Menu.

3) Select “Tech Mode”.

b) Tech Mode Menu

NOTE

Some menu items may not appear on the display depending on the options or models.

Depth 1	Depth 2	Depth 3	Depth 4
Data Setup	Clear All Mem.		
	Toner Low Level	[1-30]% : 10	
	Clear Counts	Enter Passcode [????]	Fuser
			Pickup Roller
			Torque Limiter
			Transfer Roller
	Engine Footer	On	
		Off *	
	Dial Tone	On	
		Off	
Machine Test	Switch Test		
	Test Param Set		
	Dram Test		
	Rom Test		
	Pattern Test		
	Shading Test	Shading&Print	
		Print	
	EDC Mode	Copier	Nvm Read Write
			Test Routines
		Fax	Nvm Read Write
			Test Routines
	Restart Machine		

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Depth 1	Depth 2	Depth 3	Depth 4
Report	Fax Protocol Dump		
	Menu Map		
	Supplies Info		
	Configuration		
	Error Info		
	Usage Counter		
	Auto Color Reg.		
	Auto Toning		

c) Data Setup

- Clear All Memory

  The function resets the system to factory default settings. This function is used to reset the system to the initial value when the product is functioning abnormally . All the values are returned to the default values, and all the information, which was set by the user, will be erased.

  NOTE

  Always perform a memory clear after replacing the main board. Otherwise, the system may not operate properly.

- Toner Low Level

  The function is to set up the time to inform toner low status. This function can provide user convenience for replacing the toner cartridge.

- Clear Count

  This function resets the count value you select.

- Engine Footer

  This function is for monitoring of the engine status. If you perform this function, at printing, the setting value for engine is shown on the bottom of the printed page.

d) Machine Test

- **Switch Test**

  Use this feature to test all keys on the operation control panel. The result is displayed on the LCD window each time you press a key.

- **Dram Test**

  Use this feature to test the machine's DRAM. The result appears in the LCD display.

- **Shading Test**

  The function is to get the optimum scan quality by the specific character of the CIS (Contact Image Sensor). If the copy image quality is poor, perform this function to check the condition CIS unit.

- **EDC Mode**
  - Copier > NVM Read/Write : This menu changes a configuration value for engine firmware.

Depth 1	Depth 2
105-Charger	0030-MHV DC Black
	0031-MHV DC Color

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Depth 1	Depth 2
106-Developer	0000-Deve DC Yellow
	0010-Deve DC Magenta
	0020-Deve DC Cyan
	0030-Deve DC Black
	0121-Yellow Blade DC
	0122-Magenta Blade DC
	0123-Cyan Blade DC
	0124-Black Blade DC
107-Transfer	0030-STransfer1 High Voltage
	0080-Transfer2 High Voltage
109-Fixing	0010-Run Temperature offset
110-LSU	0040-LD Power Yellow
	0050-LD Power Magenta
	0060-LD Power Cyan
	0070-LD Power Black

- Copier > Test Routines : This menu performs test routines for the engine.

Depth 1	Depth 2
100-Motor	0051-YMCK OPC Motor
	0052-YMCK OPC Motor Rdy
	0072-YMCK DEV Motor
	0073-YMCK DEV Motor Rdy
	0260-SMPS Fan
	0340-Feed Mot
	0360-ITB Tension Release Motor
101-Clutch	0010-Tray1 Pickup
	0050-Registration
	0171-Front cover open
	0190-OutBin Full
	0240-DR Nip Release
	0250-Knock Up Plate
	0251-Fuser Gap Enable
102-Paper Handling	0010-Tray1 Empty
	0360-Regi Sens
	0370-Exit Sens
	0680-ITB Tension Home Sensor
105-Charger	0030-K MHV Bias
	0031-Color MHV Bias

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106-Developer	0000-Y Dev Bias
	0010-M Dev Bias
	0020-C Dev Bias
	0030-K Dev Bias
	0040-Black OPC Home Sensor
	0050-Color OPC Home Sensor
	0060-DR Nip Home Sensor
	0070-Yellow Blade DC
	0080-Magenta Blade DC
	0090-Cyan Blade DC
	0100-Black Blade DC
107-Transfer	0071-YMCK THV Bias
	0072-YMCK THV Bias R
	0073-YMCK THV- Bias
	0080-THV +
	0090-THV + R
	0160-Erase Lamp
109-Fixing	0000-Temp A
	0011-LSU Temperature
	0012-Inner Temperature
	0013-Outer Temperature
	0014-Huminity
	0020-Fuser Fan Rdy
	0040-Fuser Fan Run
110-LSU	0000-LSU Motor1 Rdy
	0060-LSU Motor1 Run
	0080-LD Power1
	0090-LD Power2
	0100-LD Power3
	0110-LD Power4
111-Toner	0080-ID Sensor
	0090-ID Sensor Chk

- Fax > NVM Read/Write : This menu changes a configuration value for fax firmware.

0200-Pause Dial Time	0420-DTMF Timing
0210-Dial Pul. M/B	0500-Dial Mode
0220-AutoDial P-Time	0520-Error Rate
0300-Ring On Time	0530-Dial tone detect
0310-Ring Off Time	0540-Loop cur. det.
0320-Ring Det. Freq	0550-Busy sngl det.
0400-DTMF H-Freq Lv	0700-LineMon. Setting
0410-DTMF L-Freq Lv	0800-Modem Speed

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0810-Fax Trans. Lv
0830-AutoDialTimeout

- Fax > Test Routines : This menu performs test routines for the fax.

0012-Sngl T 1100 L1
0014-Sngl T 1650 L1
0015-Sngl T 1850 L1
0016-Sngl T 2100 L1
0020-DTMF # Line1
0021-DTMF * Line1
0022-DTMF 0 Line1
0023-DTMF 1 Line1
0024-DTMF 2 Line1
0025-DTMF 3 Line1
0026-DTMF 4 Line1
0027-DTMF 5 Line1
0028-DTMF 6 Line1
0029-DTMF 7 Line1
0030-DTMF 8 Line1
0031-DTMF 9 Line1
0040-V.21 300 Ln1
0041-V.27ter2400L1
0042-V.27ter4800L1
0043-V.29 7200 L1

0044-V.29 9600 L1
0045-V.17 7200 L1
0046-V.17 9600 L1
0047-V.17 12000 L1
0048-V.17 14400 L1
0049-V.34 2400 L1
0050-V.34 4800 L1
0051-V.34 7200 L1
0052-V.34 9600 L1
0053-V.34 12000 L1
0054-V.34 14400 L1
0055-V.34 16800 L1
0056-V.34 19200 L1
0057-V.34 21600 L1
0058-V.34 24000 L1
0059-V.34 26400 L1
0060-V.34 28800 L1
0061-V.34 31200 L1
0062-V.34 33600 L1

e) Report

- **Supplies Info**

  Supplies Information Report shows toner cartridge information such as toner remaining, toner capacity, toner product date etc.

- **Configuration**

  Configuration report shows the status of the user-selectable options. You may print this list to confirm your changes after changing settings. This page provides useful information for service.

- **Error Info**

  Error Information Report shows error records.

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4.1.8.2. Tech Mode (CLX-4195FW)

a) Entering Tech Mode

To enter the service mode, press 1,2,3 number keys simultaneously. When the password dialog box appears, enter “1934” and press the “OK” button.

b) Tech Mode Menu

Depth 1	Depth 2	Depth 3	Depth 4
Information	General	Machine Serial Number	
		Network IP Address	
	Software Version	Set Version	
		Main Controller	
		User Interface	
		Network Controller	
	Report	Fax Protocol Dump	
		Configuration	
		Supplies Information	
		Usage Counter	
		Error Information	
		Auto Color Registration	
		Job Duty	
		Auto Toning History	
Test Routine	Copier	NVM Read/Write	
		Test Routine	
	Fax	NVM Read/Write	
		Test Routine	
		Protocol Report	
	Others	Shading Test	Shade and Print Report
			Print last shade report
		Memory Clear	Country
		Toner Low Level	[1-30]% : 10
		Counter Reset	Fuser
			Pickup Roller
			Retard Roller
			Torque Limiter
			Transfer Roller
			Scan
		Engine Footer	Off
			On

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c) Information

- **General**

  This menu displays the machine's serial number, assigned IP address.

- **Software Version**

  This menu displays all the version of the software installed in the system in detail.

- **Report**

  You can print the various report that is stored in system.

d) Machine Test

- **Copier**
  - NVM Read/Write : This menu changes a configuration value for engine firmware.

Depth 1	Depth 2
105-0030	MHV DC Black
105-0031	MHV DC Color
106-0000	Deve DC Yellow
106-0010	Deve DC Magenta
106-0020	Deve DC Cyan
106-0030	Deve DC Black
106-0121	Yellow Blade DC
106-0122	Magenta Blade DC
106-0123	Cyan Blade DC
106-0124	Black Blade DC
107-0030	Transfer1 High Voltage(THV) Black
107-0080	Transfer2 High Voltage(THV2)
109-0010	Run Temperature offset
110-0040	LD Power Yellow
110-0050	LD Power Magenta
110-0060	LD Power Cyan
110-0070	LD Power Black

  - Test Routines : This menu performs test routines for the engine.

Depth 1	Depth 2
100-0051	OPC Motor
100-0052	OPC Motor Ready
100-0072	DEV Motor
100-0073	DEV Motor Ready
100-0260	SMPS Fan Run
100-0340	Feed Motor
100-0360	ITB Tension Release Motor
101-0010	T1 Pick-Up Clutch
101-0050	Registration Clutch

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101-0171	Cover Open Sensor
101-0190	Out-Bin Full Sensor
101-0240	DR Nip Release
101-0250	Knock Up Plate
101-0251	FuserGapEnable
102-0010	T1 Paper Empty Sensor
102-0360	Regi. Sensor
102-0370	Exit Sensor
102-0680	ITB Tension Home Sensor
105-0030	Black MHV Bias
105-0031	Color MHV Bias
106-0000	Yellow Dev Bias
106-0010	Magenta Dev Bias
106-0020	Cyan Dev Bias
106-0030	Black Dev Bias
106-0040	Black OPC Home Sensor
106-0050	Color OPC Home Sensor
106-0060	DR Nip Home Sensor
106-0070	Yellow Blade DC
106-0080	Magenta Blade DC
106-0090	Cyan Blade DC
106-0100	Black Blade DC
107-0071	THV Bias
107-0072	THV Bias Read
107-0073	THV(-) Bias
107-0080	iTHV(+) Bias
107-0090	iTHV Bias Read
107-0160	Erase Lamp1
109-0000	Fuser Temperature A
109-0011	LSU Temperature
109-0012	Inner Temperature
109-0013	Outer Temperature
109-0014	Huminity
109-0020	Fuser Fan Run Ready
109-0040	Fuser Fan Run
110-0000	LSU Motor1 Run Ready
110-0060	LSU Motor1 Run
110-0080	LSU LD Power1
110-0090	LSU LD Power2
110-0100	LSU LD Power3
110-0110	LSU LD Power4

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111-0080	ID Sensor
111-0090	ID Sensor Check

- **Fax**
  - NVM Read/Write : This menu changes a configuration value for fax firmware.

020-200	Pause Dial Time
020-210	Dial Pulse M/B ratio
020-220	Auto Dial Start Pause Time
020-300	Ring On Time
020-310	Ring Off Time
020-320	Ring Detection Freq
020-400	DTMF High-Freq Level
020-410	DTMF Low-Freq Level
020-420	DTMF Timing
020-500	Dial Mode

020-520	Error Rate
020-530	Dial tone detect
020-540	Loop current detect
020-550	Busy signal detect
020-700	Line Monitor Setting
020-800	Modem Speed
020-810	Fax Transmission Level
020-830	Auto Dial Timeout

  - Test Routines : This menu performs test routines for the fax.

020-012	Sngl Tone 1100Hz Ln1
020-014	Sngl Tone 1650Hz Ln1
020-015	Sngl Tone 1850Hz Ln1
020-016	Sngl Tone 2100Hz Ln1
020-020	DTMF # Line1
020-021	DTMF * Line1
020-022	DTMF 0 Line1
020-023	DTMF 1 Line1
020-024	DTMF 2 Line1
020-025	DTMF 3 Line1
020-026	DTMF 4 Line1
020-027	DTMF 5 Line1
020-028	DTMF 6 Line1
020-029	DTMF 7 Line1
020-030	DTMF 8 Line1
020-031	DTMF 9 Line1
020-040	V.21 300 bps Line1
020-041	V.27ter 2400 bps Line1
020-042	V.27ter 4800 bps Line1
020-043	V.29 7200 bps Line1

020-044	V.29 9600 bps Line1
020-045	V.17 7200 bps Line1
020-046	V.17 9600 bps Line1
020-047	V.17 12000 bps Line1
020-048	V.17 14400 bps Line1
020-049	V.34 2400 bps Line1
020-050	V.34 4800 bps Line1
020-051	V.34 7200 bps Line1
020-052	V.34 9600 bps Line1
020-053	V.34 12000 bps Line1
020-054	V.34 14400 bps Line1
020-055	V.34 16800 bps Line1
020-056	V.34 19200 bps Line1
020-057	V.34 21600 bps Line1
020-058	V.34 24000 bps Line1
020-059	V.34 26400 bps Line1
020-060	V.34 28800 bps Line1
020-061	V.34 31200 bps Line1
020-062	V.34 33600 bps Line1

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e) Report

- **Shading Test**

  This function is to check quality of scanned images, especially defect in optical devices, including lens, mirror, lamp, and etc, are suspected.

- **Memory Clear**

  The function resets the system to factory default settings. This function is used to reset the system to the initial value when the product is functioning abnormally . All the values are returned to the default values, and all the information, which was set by the user, will be erased.

- **Toner Low Level**

  The function is to set up the time to inform toner low status. This function can provide user convenience for replacing the toner cartridge.

- **Counter Reset**

  This function resets the count value you select.

- **Engine Footer**

  This function is for monitoring of the engine status. If you perform this function, at printing, the setting value for engine is shown on the bottom of the printed page.

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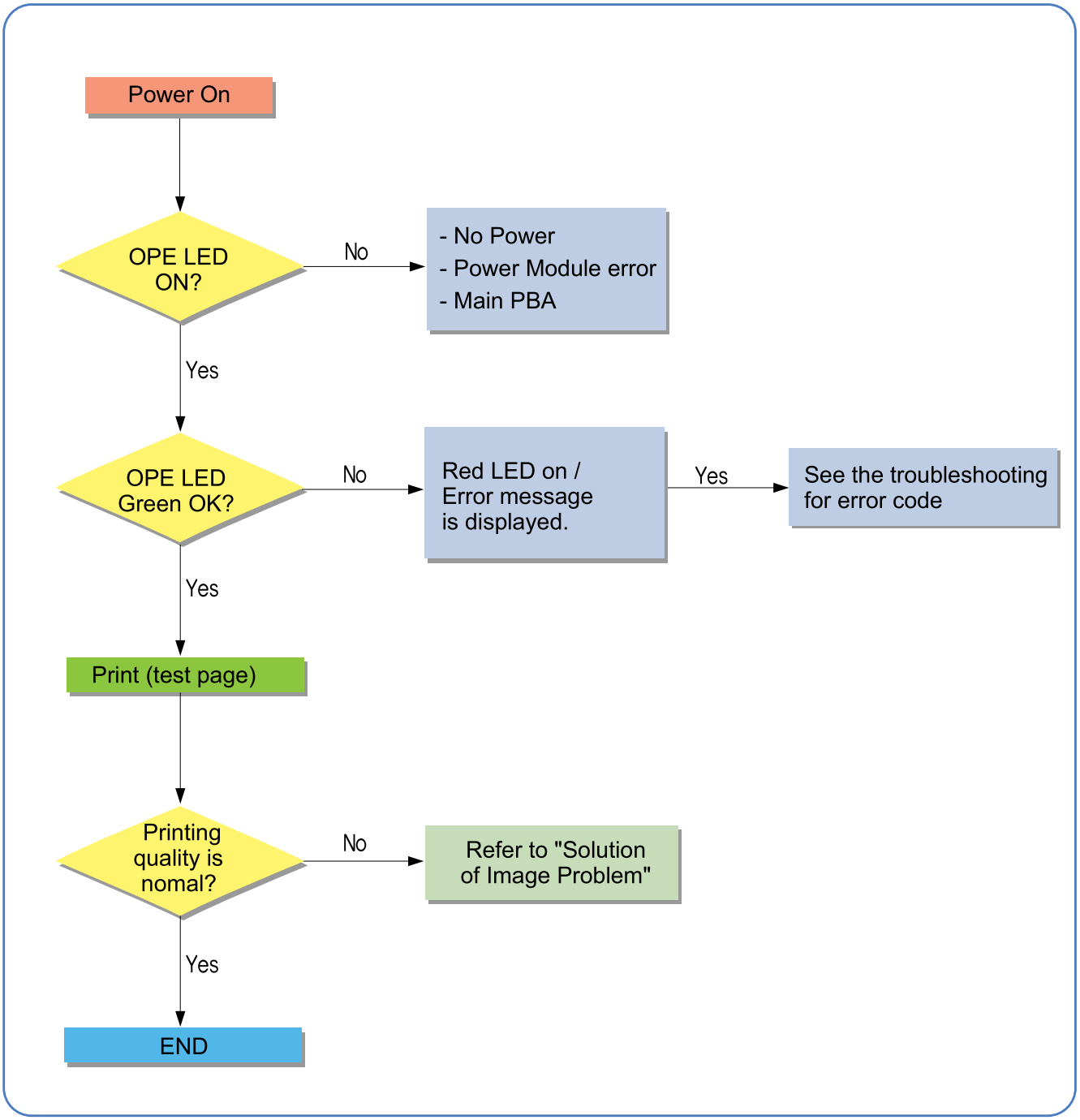
4.2. Troubleshooting

4.2.1. Procedure of checking the symptoms

Before attempting to repair the printer first obtain a detailed description of the problem from the customer.



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4.2.1.1. Basic Check List

1) **Check the Power.**

- Check that the power switch is turned on.
- Check that the power cable is plugged into the outlet and the printer.
- Check the voltage of the power outlet.

2) **Check the LED of Panel.**

- Is there OPE LED ON?
  - › If not check power cable, switch SMPS or Main board.
- Is the abnormal Lamp?
  - › Check the Main board and cable harness.

3) **Check the Paper Path**

- Is there a Paper Jam?
  - › Remove any paper fragments caught in the paper path.
- Paper Jam occurs repeatedly at a specific point in the Paper Path
  - › Open the fuser cover, Jam clear.
  - › Dismantle the machine and carefully inspect the region where the jam occurs.
    (Especially, check if paper fragments are caught in the Fuser

4) **Print the Information Page (Configuration).**

- Try printing a test page from a computer.
  - › If there is an error check cables and driver installation.

5) **Check the Print Quality.**

- Is there are a Print Quality Problem?
  - › Refer to image quality problem section.

6) **Check consumables (toner etc.).**

- Using the keys print the Test Pattern.
  - › Expected life of various consumable parts, compare this with the figures printed and replace as required

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4.2.2. Error Code and Troubleshooting

Messages appear on the control panel display to indicate the machine's status or errors. Refer to the tables below to understand the messages' and their meaning, and correct the problem, if necessary.

NOTE

Some messages may not appear on the display depending on the options or models.

Error Code	Error Message	Troubleshooting Page
A1-1210	Actuator Motor Failure : #A1-1210. Call for service if the problem persists.	Page 4–38
A1-2112	Actuator Motor Failure : #A1-2112. Call for service if the problem persists.	Page 4–39
A1-3612	Actuator Motor Failure : #A1-3612. Call for service if the problem persists.	Page 4–39
A1-4111	Actuator Motor Failure : #A1-4111. Call for service if the problem persists.	Page 4–40
A1-4112	Actuator Motor Failure : #A1-4112. Call for service if the problem persists.	Page 4–40
A1-4310	Actuator Motor Failure : #A1-4310. Call for service if the problem persists.	Page 4–40
A2-1210	Actuator Fan Failure : #A2-1210. Call for service if the problem persists.	Page 4–41
A2-2110	Actuator Fan Failure : #A2-2110 . Call for service if the problem persists.	Page 4–41
A3-3211	Actuator Sensor Failure #A3-3211: Call for service if the problem persists.	Page 4–41
A3-3212	Actuator Sensor Failure #A3-3212: Call for service if the problem persists.	Page 4–41
A3-3311	Actuator Sensor Failure #A3-3311: Call for service if the problem persists.	Page 4–42
A3-3312	Actuator Sensor Failure #A3-3312: Call for service if the problem persists.	Page 4–42
A3-3320	Not proper room temperature. Change room temperature.	Page 4–42
C2-2110	Prepare new yellow toner cartridge.	Page 4–43
C2-2120	Replace with new yellow toner cartridge.	Page 4–43
C2-2150	Replace with new yellow toner cartridge.	Page 4–43
C2-2320	Yellow Toner Failure: #C2-2320. Install yellow toner cartridge again.	Page 4–44
C2-2410	Install yellow toner cartridge.	Page 4–44
C2-2512	Yellow toner cartridge is not compatible. Check user's guide.	Page 4–45
C2-3110	Prepare new magenta toner cartridge.	Page 4–43
C2-3120	Replace with new magenta toner cartridge.	Page 4–43
C2-3150	Replace with new magenta toner cartridge.	Page 4–43
C2-3320	Magenta Toner Failure: #C2-3320. Install magenta toner cartridge again.	Page 4–44
C2-3410	Install magenta toner cartridge.	Page 4–44
C2-3512	Magenta toner cartridge is not compatible. Check user's guide.	Page 4–45
C2-4110	Prepare new cyan toner cartridge.	Page 4–43
C2-4120	Replace with new cyan toner cartridge.	Page 4–43
C2-4150	Replace with new cyan toner cartridge.	Page 4–43
C2-4320	Cyan Toner Failure: #C2-4320. Install cyan toner cartridge again.	Page 4–44
C2-4410	Install cyan toner cartridge.	Page 4–44
C2-4512	Cyan toner cartridge is not compatible. Check user's guide.	Page 4–45
C2-5110	Prepare new black toner cartridge.	Page 4–43
C2-5120	Replace with new black toner cartridge.	Page 4–43

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Error Code	Error Message	Troubleshooting Page
C2-5150	Replace with new toner cartridge.Replace with black new toner cartridge.	Page 4–43
C2-5320	Black Toner Failure: #C2-5320. Install black toner cartridge again.	Page 4–44
C2-5410	Install black toner cartridge.	Page 4–44
C2-5512	Black toner cartridge is not compatible. Check user's guide.	Page 4–45
C5-1110	Prepare new transfer belt unit.	Page 4–45
C5-1120	Replace new transfer belt unit.	Page 4–45
C5-1310	Install image transfer belt unit.	Page 4–45
C5-1410	Image transfer belt unit is not compatible. Check users guide.	Page 4–46
C5-1710	Sensor Failure: #C5-1710. Turn off then on.	Page 4–46
C6-1110	Prepare new fuser unit.	Page 4–46
C6-1120	Replace with new fuser unit.	Page 4–46
C7-1110	Waste toner container is almost full. Order new one.	Page 4–46
C7-1311	Waste toner containrt is not installed. Install it.	Page 4–47
C9-1112	Replace with new Tray1 pickup roller.	Page 4–47
C9-1116	End of life, Replace with new Tray1 retard roller.	Page 4–47
M1-1110	Paper jam in tray 1.	Page 4–48
M1-5112	Paper is empty in tray 1. Load paper.	Page 4–48
M2-1110	Paper jam inside of machine.	Page 4–49
M2-1116	Paper jam or empty in tray.	Page 4–49
M3-1110	Paper jam in exit area	Page 4–50
M3-2130	Too much paper in output bin tray. Remove printed paper	Page 4–51
S2-4120	Door is open. Close it.	Page 4–52
S3-3121	Scanner locked or another problem occurred.(No Switch Case)Scanner is locked.	Page 4–52
S4-2111	Fax Memory is almost full. Print or remove received fax Job	Page 4–53
S4-2112	Fax memory is full. Print or remove received fax Job	Page 4–53
S4-3111	Fax System Failure: #S4-3111. Install fax modem card again..	Page 4–53
S5-3110	UI System Failure: #S5-3110. Call for service	Page 4–53
S6-3123	This IP address conflicts with that of other system. Check it.	Page 4–54
S6-3128	802.1x authentication failed. Please Contact the System Administrator	Page 4–54
U1-2132	Fuser Unit Failure #U1-2132: Turn off then on.	Page 4–54
U1-2315	Fuser Unit Failure: #U1-2315.Turn off then on.	Page 4–54
U1-2320	Fuser Unit Failure #U1-2320: Turn off then on.	Page 4–54
U1-2330	Fuser Unit Failure #U1-2330: Turn off then on.	Page 4–54
U1-2334	Fuser Unit Failure: #U1-2334. Turn off then on	Page 4–54
U1-2340	Fuser Unit Failure : #U1-2340.Turn off then on.	Page 4–54
U1-234H	Fuser Unit Failure: #U1-234H. Please turn off then on.	Page 4–54
U2-6122	LSU Failure: #U2-6122. Please turn off then on.	Page 4–55
U2-6142	LSU Failure: #U2-6142. Please turn off then on.	Page 4–55
U3-3113	Original paper jam in front of scanner.	Page 4–56
U3-3114	Original paper jam in front of scanner.	Page 4–56

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Error Code	Error Message	Troubleshooting Page
U3-3313	Original paper jam inside of scanner.	Page 4–56
U3-3314	Original paper jam inside of scanner.	Page 4–56
U3-4110	Door of scanner is open.	Page 4–56

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► **Error Code**

A1-1210

► **Error message**

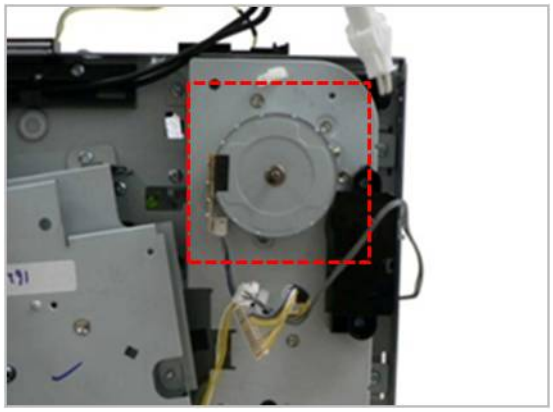
Actuator Motor Failure : #A1-1210. Call for service if the problem persists.

► **Symptom**

The fuser motor does not operate. / The fuser motor is operating but is recognized as stop status.

► **Troubleshooting method**

1) Turn the machine off then on. If the error persists, turn the machine off again.
2) Remove the rear and right cover.
3) Check if there are any obstacles or paper around the fuser unit.
4) Check if the connection between main board and fuser motor are correct.
5) If the connection is OK, replace the fuser motor.



6) If the problem persists, replace the main board.

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► **Error Code**

A1-2112

A1-3612

► **Error message**

Actuator Motor Failure : #A1-2112. Call for service if the problem persists.

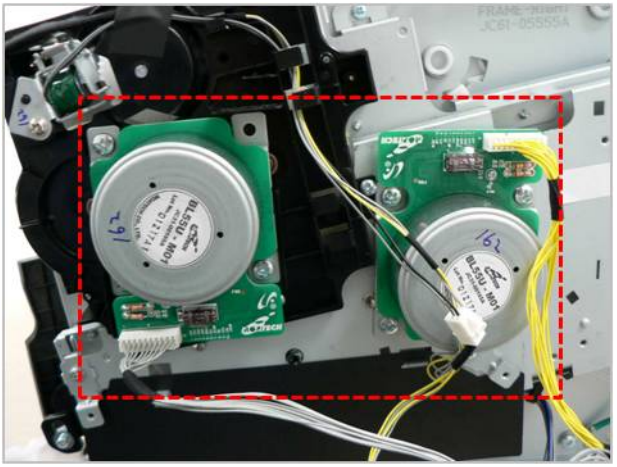
Actuator Motor Failure : #A1-3612. Call for service if the problem persists.

► **Symptom**

The OPC/Deve motor does not operate. / The OPC/Deve motor is operating but is recognized as stop status.

► **Troubleshooting method**

1) Turn the machine off then on. If the error persists, turn the machine off again.
2) Remove the right cover.
3) Check if the connection between main board and OPC/Deve motor are correct.
4) If the connection is OK, replace the OPC/Deve motor.



5) If the problem persists, replace the main board.

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► **Error Code**

A1-4111

A1-4112

► **Error message**

Actuator Motor Failure : #A1-3612. Call for service if the problem persists.

► **Symptom**

The transfer roller can't move the engage/disengage position.

► **Troubleshooting method**

1) Turn the machine off then on. If the error persists, turn the machine off again.
2) Remove the right cover.
3) Check if the connection between main board and Feed drive unit are correct.
4) If the connection is OK, replace the step motor of the Feed drive unit.
5) If the problem persists, replace the main board.

► **Error Code**

A1-4310

► **Error message**

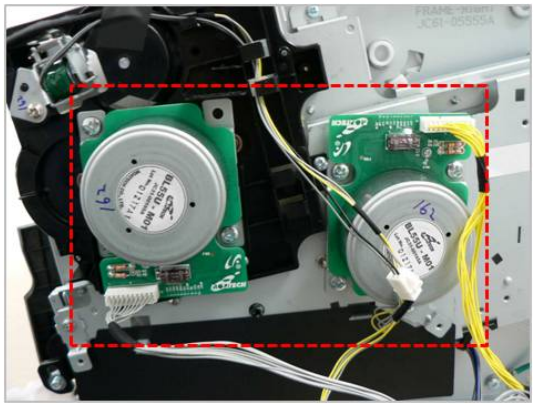
Actuator Motor Failure : #A1-4310. Call for service if the problem persists.

► **Symptom**

The motor for ITB unit does not operate normally.

► **Troubleshooting method**

1) Turn the machine off then on. If the error persists, turn the machine off again.
2) Remove the right cover.
3) Check if the connection between main board and the main drive unit are correct.
4) If the connection is OK, replace the main drive unit.



5) If the problem persists, replace the main board.

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► **Error Code**

A2-1210

A2-2110

► **Error message**

Actuator Fan Failure : #A2-1210. Call for service if the problem persists.

Actuator Fan Failure : #A2-2110. Call for service if the problem persists.

► **Symptom**

The SMPS fan or Fuser fan does no operate normally.

► **Troubleshooting method**

1) Turn the machine off then on. If the error persists, turn the machine off again.
2) Remove the right cover.
3) Check if the connection between main board and the related fan is correct.
4) If the connection is OK, replace the defective fan.

► **Error Code**

A3–3211

A3–3212

► **Error message**

Actuator Sensor Failure #A3-3211: Call for service if the problem persists.

Actuator Sensor Failure #A3-3212: Call for service if the problem persists.

► **Symptom**

The inner temperature sensor is defective.

► **Troubleshooting method**

1) Turn the machine off then on. If the error persists, turn the machine off again.
2) Enter the tech mode. Check the temperature sensor output.
3) If the sensor is defective, replace it.
4) If the temperature sensor is OK, replace the main board.

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► **Error Code**

A3–3311

A3–3312

► **Error message**

Actuator Sensor Failure #A3-3311: Call for service if the problem persists.

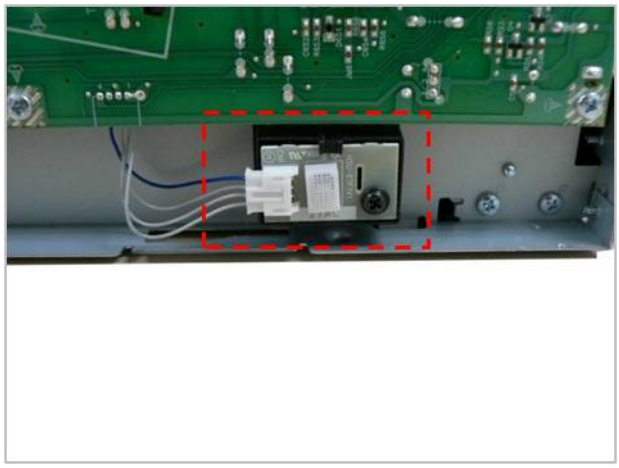
Actuator Sensor Failure #A3-3312: Call for service if the problem persists.

► **Symptom**

The outer temperature sensor is defective.

► **Troubleshooting method**

1) Turn the machine off then on. If the error persists, turn the machine off again.
2) Enter the tech mode. Check the temperature sensor output.
3) If the sensor is defective, replace it.



4) If the temperature sensor is OK, replace the main board.

► **Error Code**

A3–3320

► **Error message**

Not proper room temperature. Change room temperature.

► **Symptom**

The value of the outer temperature sensor is out of normal area.

► **Troubleshooting method**

1) Check if the machine is installed in the proper area.
2) If the temperature sensor is defective, replace it.

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► **Error Code**

C2-2110

C2-3110

C2-4110

C2-5110

► **Error message**

Prepare new yellow toner cartridge.

Prepare new magenta toner cartridge.

Prepare new cyan toner cartridge.

Prepare new black toner cartridge.

► **Symptom**

The remaining toner cartridge is less than 10%

► **Troubleshooting method**

1) Print the supply information report. Check the life remaining of the toner cartridge.

2) If its life is at the end, turn the machine off and replace the toner cartridge with new one.

► **Error Code**

C2-2120

C2-2150

C2-3120

C2-3150

C2-4120

C2-4150

C2-5120

C2-5150

► **Error message**

Replace with new yellow toner cartridge.

Replace with new magenta toner cartridge.

Replace with new cyan toner cartridge.

Replace with new black toner cartridge.

► **Symptom**

The toner cartridge is at the end of its life.

► **Troubleshooting method**

1) Print the supply information report. Check the life remaining of the toner cartridge.

2) If its life is at the end, turn the machine off and replace the toner cartridge with new one.

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► **Error Code**

C2-2320

C2-2410

C2-3320

C2-3410

C2-4320

C2-4410

C2-5320

C2-5410

► **Error message**

Yellow Toner Failure: #C2-2320. Install yellow toner cartridge again.

Install yellow toner cartridge.

Magenta Toner Failure: #C2-3320. Install magenta toner cartridge again.

Install magenta toner cartridge.

Cyan Toner Failure: #C2-4320. Install cyan toner cartridge again.

Install cyan toner cartridge.

Black Toner Failure: #C2-5320. Install black toner cartridge again.

Install black toner cartridge.

► **Symptom**

The toner cartridge is not installed or the CRUM has some problem.

► **Troubleshooting method**

1) Check if the toner cartridge is installed properly. Turn the machine off then on.
2) If the error message is not disappear, remove the toner cartridge. Thoroughly roll the cartridge five or six times to distribute the toner evenly inside the cartridge. And reinstall the toner cartridge.
3) If the problem persists, check that the CRUM contact area is contaminated. Clean it.
4) If the problem persists, replace the toner cartridge with new one.

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► **Error Code**

C2-2512

C2-3512

C2-4512

C2-5512

► **Error message**

Yellow toner cartridge is not compatible. Check user's guide.

Magenta toner cartridge is not compatible. Check user's guide.

Cyan toner cartridge is not compatible. Check user's guide.

Black toner cartridge is not compatible. Check user's guide.

► **Symptom**

Toner cartridge is not compatible.

► **Troubleshooting method**

1) Print the supply information report. Check information of the toner cartridge.

2) If the toner cartridge is not a Samsung genuine toner cartridge, replace with new one.

► **Error Code**

C5-1110

C5-1120

► **Error message**

Prepare new transfer belt unit.

Replace new transfer belt unit.

► **Symptom**

The ITB Unit is at the end of its life.

► **Troubleshooting method**

1) Print the supply information report. Check the life remaining of the ITB unit.

2) If its life is at the end, turn the machine off and replace the ITB unit with new one.

► **Error Code**

C5-1310

► **Error message**

Install image transfer belt unit.

► **Symptom**

The ITB Unit is not installed properly.

► **Troubleshooting method**

1) Turn the machine off. Remove and reinstall the ITB unit.

2) Turn the machine on. If the problem persists, replace the ITB unit.

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► **Error Code**

C5-1410

► **Error message**

Image transfer belt unit is not compatible. Check users guide.

► **Symptom**

The ITB unit is not compatible.

► **Troubleshooting method**

1) Print the supply information report. Check information of the ITB Unit.

2) If the toner cartridge is not a Samsung genuine ITB Unit, replace with new one.

► **Error Code**

C5-1710

► **Error message**

Sensor Failure: #C5-1710. Turn off then on.

► **Symptom**

The ITB home position sensor has the problem.

► **Troubleshooting method**

1) Turn the machine off. Replace the ITB Unit.

► **Error Code**

C6-1110

C6-1120

► **Error message**

Prepare new fuser unit.

Replace with new fuser unit.

► **Symptom**

The fuser unit is at the end of its life.

► **Troubleshooting method**

1) Print the supply information report. Check the life remaining of the fuser unit.

2) If its life is at the end, turn the machine off and replace the fuser unit with new one.

► **Error Code**

C7-1110

► **Error message**

Waste toner container is almost full. Order new one.

► **Symptom**

The waste toner container is at the end of its life.

► **Troubleshooting method**

1) Print the supply information report. Check the life remaining of the waste toner container.

2) If its life is at the end, turn the machine off and replace the waste toner container with new one.

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► **Error Code**

C7-1311

► **Error message**

Waste toner container is not installed. Install it.

► **Symptom**

The waste toner container is not installed

► **Troubleshooting method**

1) Check if the waste toner container is installed properly.

2) Remove and reinstall the waste toner container.

► **Error Code**

C9-1112

C9-1116

► **Error message**

Replace with new Tray1 pickup roller.

End of life, Replace with new Tray1 retard roller.

► **Symptom**

The pick up roller or reverse roller is at the end of its life.

► **Troubleshooting method**

1) Turn the machine off.

2) Replace the pick up roller Assy and reverse roller Assy.

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► **Error Code**

M1–1110

► **Error message**

Paper jam in tray 1.

► **Symptom**

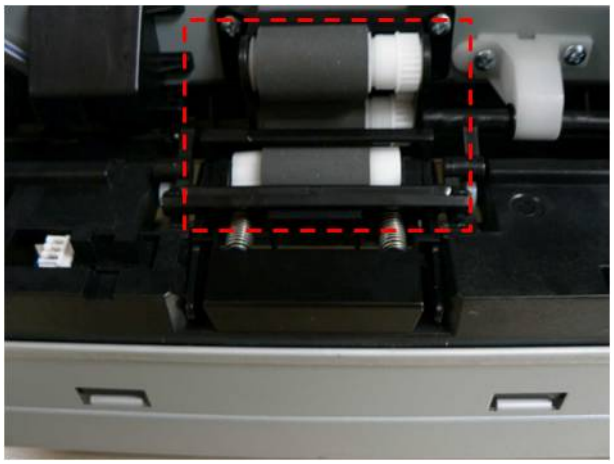
The jammed paper has occurred in the tray1.

► **Troubleshooting method**

1) Remove the jammed paper.

2) If the jammed paper occurs continually, check the followings.

a) Check if the pick up/forward/reverse roller are worn out or contaminated. Clean the contaminated part or replace it.



b) Check if the actuator is assembled correctly.

3) If the pick up clutch is defective, replace it.

► **Error Code**

M1–5112

► **Error message**

Paper is empty in tray 1. Load paper.

► **Symptom**

Paper is empty in Tray1

► **Troubleshooting method**

1) Take off the cassette. If there is no paper on the tray, load the paper.

2) If the problem persists, check the following.

a) Check if the paper empty sensor is contaminated or defective. Replace it.

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► **Error Code**

M2–1110

M2–1116

► **Error message**

Paper jam inside of machine.

Paper jam or empty in tray.

► **Symptom**

The jammed paper has occurred inside machine.

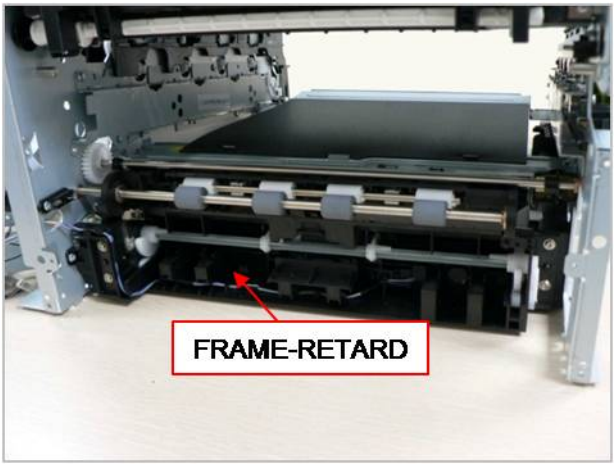
► **Troubleshooting method**

1) Remove the jammed paper.

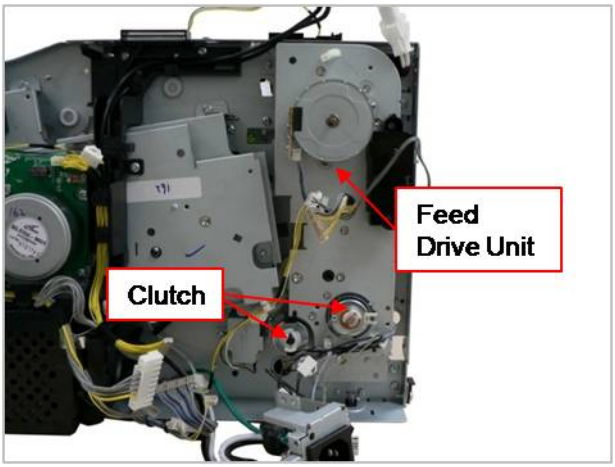
2) If the problem persists, check the following.

a) Check if there is any obstacles or paper on the paper path. Remove it.

b) Check if the FRAME-RETARD unit is assembled properly.



c) Check if the pick up clutch, regi clutch, feed drive unit are working normally. If there is a defective part, replace it.



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► **Error Code**

M3–1110

► **Error message**

Paper jam in exit area.

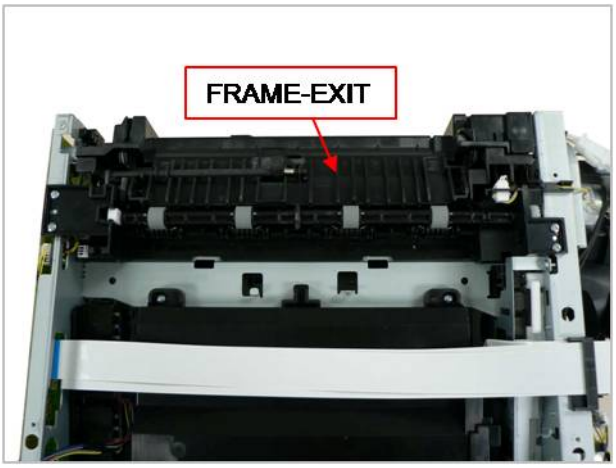
► **Symptom**

The jammed paper has occurred in the exit area.

► **Troubleshooting method**

1) Remove the jammed paper.

2) If the problem persists, check the following.
   a) Check if there is any obstacles or paper on the paper path. Remove it.
   b) Check if the fuser unit is assembled properly. If the fuser unit is defective, replace it.
   c) Check if the FRAME-EXIT unit has any defective parts. Replace the FRAME-EXIT.



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► **Error Code**

M3–2130

► **Error message**

Too much paper in output bin tray. Remove printed paper

► **Symptom**

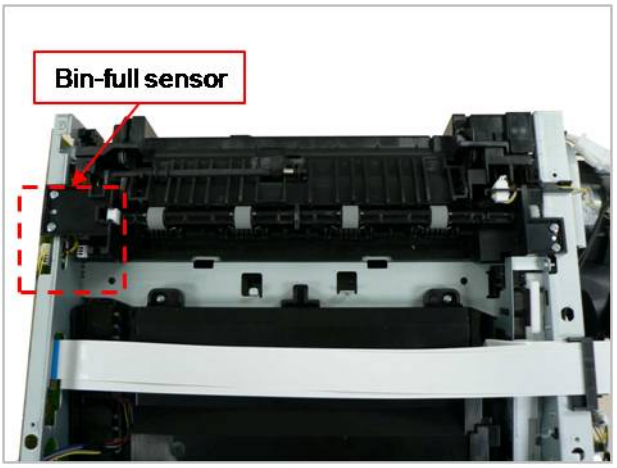
The machine detected that the output tray has got full or the bin-full sensor is defective.

► **Troubleshooting method**

1) Remove the paper on the output tray.

2) Check if the Bin-full Sensor connector is connected properly. Reconnect it.

3) If the sensor is defective, replace it.



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► **Error Code**

S2–4120

► **Error message**

Door is open. Close it.

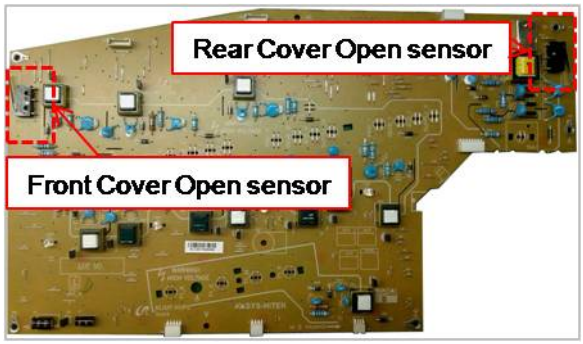
► **Symptom**

Door is open or the cover open switch is defective.

► **Troubleshooting method**

1) Check if the front cover is closed perfectly.

2) If the error persists, check that the cover-open sensor is working normally. If it is defective, replace it.



► **Error Code**

S3–3121

► **Error message**

Scanner is locked.

► **Symptom**

Scanner lock error has occurred. CIS does not move.

► **Troubleshooting method**

1) Check if the CIS unit is moving when power on.

2) Check if the at cable is connected to the CIS unit properly. Re-connect or replace the cable.

3) If the CIS is defective, replace it.

4) Check if there is any defective part in the scanner unit. (Gear, Belt, Motor etc.)

5) If the problem persists, replace the main board.

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► **Error Code**

S4–2111

S4–2112

► **Error message**

Fax Memory is almost full. Print or remove received fax Job.

Fax memory is full. Print or remove received fax Job.

► **Symptom**

The fax memory is almost full.

► **Troubleshooting method**

1) Print or remove the received fax job.

► **Error Code**

S4–3111

► **Error message**

Fax System Failure: #S4-3111. Install fax modem card again.

► **Symptom**

The fax board is not installed or defective.

► **Troubleshooting method**

1) Check if the fax board is installed properly.
2) If the fax board is defective, replace it.
3) If the problem persists, replace the main board.

► **Error Code**

S5–3110

► **Error message**

UI System Failure: #S5-3110. Call for service.

► **Symptom**

The communication error between main board and OPE board has occurred.

► **Troubleshooting method**

1) Turn the machine off then on.
2) If the problem persists, check the followings.
   a) Check the connection between main board and OPE board. Reconnect the harness.
   b) If the connection is OK, replace the main board or OPE board.

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► **Error Code**

S6–3123

S6–3128

► **Error message**

This IP address conflicts with that of other system. Check it.

802.1x authentication failed. Please Contact the System Administrator.

► **Symptom**

IP address conflicts with that of other system.

► **Troubleshooting method**

1) Change the machine's IP address.
2) Check the setting-up for 802.1x confirmation server.

► **Error Code**

U1–2132

U1–2315

U1–2320

U1–2330

U1–2334

U1–2340

U1–234H

► **Error message**

Fuser Unit Failure #U1-2132: Turn off then on.

Fuser Unit Failure #U1-2315: Turn off then on.

Fuser Unit Failure #U1-2320: Turn off then on.

Fuser Unit Failure #U1-2330: Turn off then on.

Fuser Unit Failure #U1-2334: Turn off then on.

Fuser Unit Failure #U1-2340: Turn off then on.

Fuser Unit Failure #U1-234H: Turn off then on.

► **Symptom**

The temperature control of fuser unit is abnormal.

► **Troubleshooting method**

1) Check if the input voltage is normal.
2) Turn the machine off. Remove and reinstall the fuser unit. Be careful when connecting the AC-connector and Thermistor connector.
3) Turn the machine on. Is the error message is disappeared?
4) Check the followings. If the fuser unit has any problem, replace it.
   a) Check if the fuser connector is connected properly.
   b) Check if the halogen lamp voltage is normal.
   c) Check if the thermistor is contaminated or twisted.
5) If the problem persists, replace the main board or SMPS board.

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► **Error Code**

U2-6122

U2-6142

► **Error message**

LSU Failure: #U2-6122. Please turn off then on.

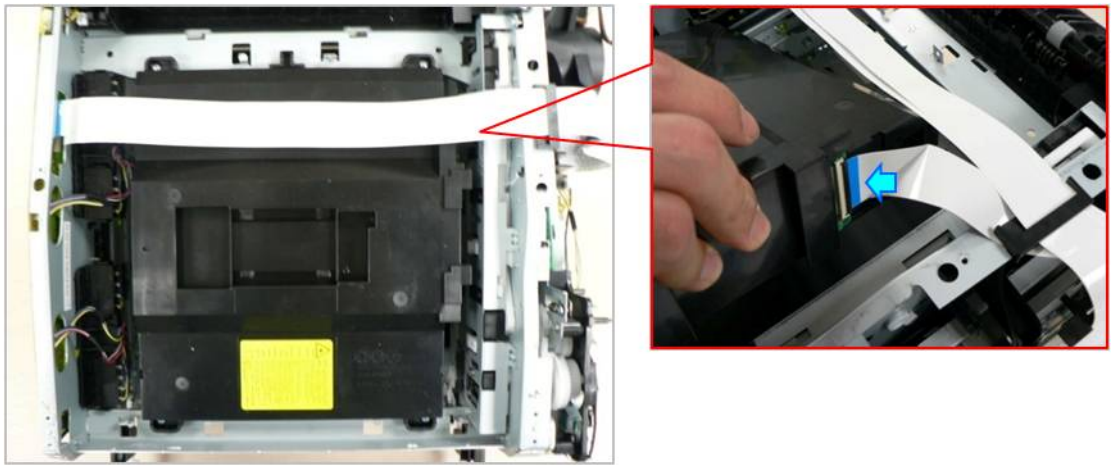
LSU Failure: #U2-6142. Please turn off then on.

► **Symptom**

LSU Motor does not work normally. / LSU Hsync signal is abnormal.

► **Troubleshooting method**

1) Check if the LSU harness on the main board is connected properly.
2) If it is OK, check that the LSU harness on LSU board is connected properly.
3) Check if the LSU harness is defective.
4) If the problem persists, replace the LSU.



5) If the problem persists after replacing LSU, replace the main board.

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► **Error Code**

U3-3113

U3-3114

U3-3313

U3-3314

► **Error message**

Original paper jam in front of scanner.

Original paper jam inside of scanner.

► **Symptom**

A document jam was detected in the ADF unit.

► **Troubleshooting method**

1) Remove the jammed paper from ADF unit.
2) If the error persists, turn the machine off then on.
3) If the document jam occurs continually, open the ADF cover-top. Check if the ADF pick up roller is contaminated or worn out. Clean or replace it.
4) If the pick up roller is OK, check the followings.
   a) Check if the ADF motor is working normally.
   b) Check if the connector on the ADF joint board is connected correctly.
5) If the problem persists, replace the ADF unit.

► **Error Code**

U3-4110

► **Error message**

Door of scanner is open.

► **Symptom**

ADF or ADF top cover is opened.

► **Troubleshooting method**

1) Close the ADF unit.
2) Close the ADF top cover.

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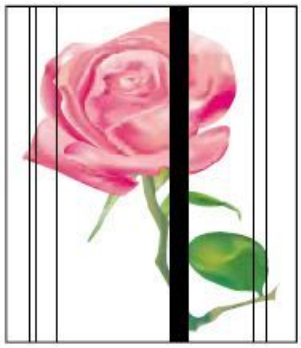
4.2.3. Image quality problems

1) Vertical Black Line and Band

- Description : Straight thin black vertical line occurs in the printed image.



Cause and Check Point	Solution
Check if the surface of the charge roller is scratched or contaminated.	Replace the toner cartridge and test again.
Check if there are grooves on the circumference of the OPC drum.	Replace the toner cartridge and test again.
Check if the cleaning blade is damaged	Replace the toner cartridge and test again.
Check if paper transfer belt is damaged or contaminated.	Replace the ITB unit and test again.

2) Vertical White Line

- Description : White vertical voids in the image.

Cause and Check Point	Solution
Check if the LSU window or internal lenses of LSU is contaminated.	Clean the LSU window with recommended cleaner(IPA). Clean the window with a clean cotton swab. If dirt is inside the LSU, replace the LSU.
Check if there are scratches on the circumference of the OPC drum.	Replace the toner cartridge and test again.
Check if there are scratches on the circumference of the developing roller.	Replace the toner cartridge and test again.
Check if paper transfer belt is damaged or contaminated.	Replace the ITB unit and test again.

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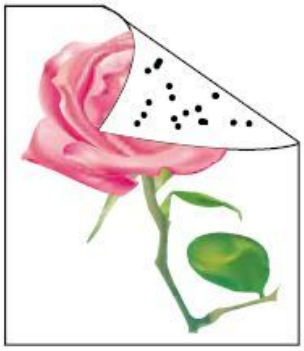
3) Contamination on back of page

- Description : The back of the page is contaminated.



Cause and Check Point	Solution
Dirty registration roller, pressure roller, feed roller, etc. Any dirty rollers through the path of the paper.	Identify the roller which may cause the problem by comparing the period of the contamination on images with the size of rollers. Clean any dirt from the roller or replace the dirty roller.
Check if the transfer roller is damaged or contaminated.	Replace the transfer roller and test again.
Check if paper transfer belt is damaged or contaminated.	Replace the ITB unit and test again.

4) Dark or Black image

- Description : The black page is printed out.

Cause and Check Point	Solution
No charging voltage in the HVPS.	Check the connecting state between the Main PBA and HVPS. Reconnect the harness.
Poor contact between toner cartridge and set contacts.	Clean the contacts as necessary. Replace any deformed or damaged contacts.
HVPS is defective.	Replace the HVPS.

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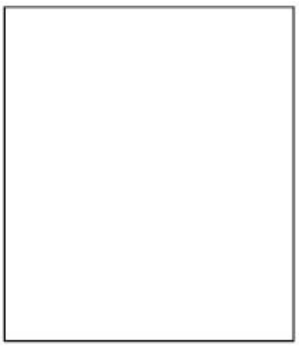
5) Blank Page

- Description : Blank page is printed.



Cause and Check Point	Solution
Bad contacts from OPC drum and/or toner cartridge to ground.	Check the terminal of Ground-OPC.
Not working the LSU.	Check the connector of LSU.
Not working the developing bias voltage on HVPS.	Replace the HVPS.

6) Uneven Density

- Description : Print Density is uneven between left and right.

Cause and Check Point	Solution
The life of the Toner Cartridge has expired.	Replace the toner cartridge.
The pressure force in the left and right springs of the ITB unit is not even.	Replace the ITB Unit

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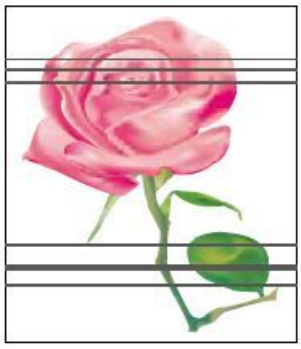
7) Horizontal Bands

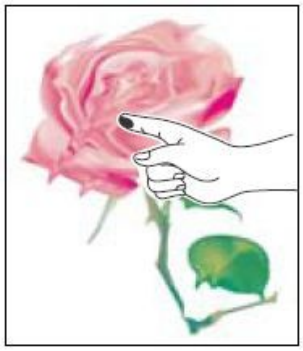
- Description : Dark or white horizontal stripes appear in the page. (These may occur at regular intervals down the page.)



Cause and Check Point	Solution
The developing roller, OPC drum or other rollers in the toner cartridge may be contaminated or deformed.	Replace the toner cartridge.
Bad contacts of HV terminals of the toner cartridge with high voltage terminals from printer set.	Clean all HV terminals in the cartridge and on the set frame. Ensure all toner or paper dust, particles are removed.

8) Poor Fusing

- Description : Toner is not properly fixed on paper.



Cause and Check Point	Solution
The media doesn’t meet specification	Use the proper media in specifications.
Fuser is defective	Replace the fuser unit.

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4.2.4. Other errors

1) Multi-feeding

- Description : Multiple sheet of paper are fed at once.

Check and cause	Solution
Pick clutch or Regi clutch does not work properly.	Replace the defective clutch if necessary.
Pick up/ Forward / Retard roller is worn out or contaminated.	Clean or replace the defective roller.

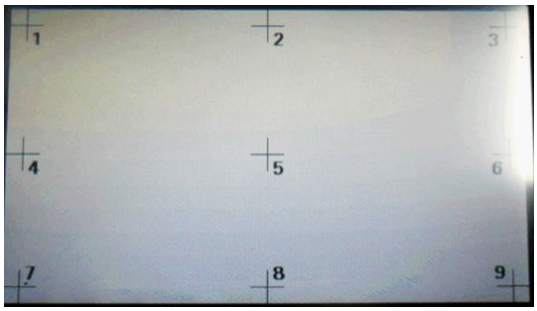
2) No-Power

- Description : When system power is turned on, LED and LCD on the operator panel do not come on.

Check and cause	Solution
The connection between main board and OPE board is bad.	Reconnect or replace the harness.
HVPS/SMPS output is abnormal.	Replace the HVPS/SMPS board.

3) Calibrating the touch screen (Touch screen model only)

- Description : Touch screen does not operate properly.

Check and cause	Solution
The linearity value for touch panel has changed due to using a machine long hours or surroundings.	1) Turn off the machine. 2) While pressing the number 0 on numeric keys, turn the machine on. Wait until calibration screen appears. 3) Press centre of mark + following order 1~9. Use your finger. Perform 2 times.  4) If there is no problem, “Complete” will appear on LCD and reboot the machine. When making a mistake, start again from the step 1.

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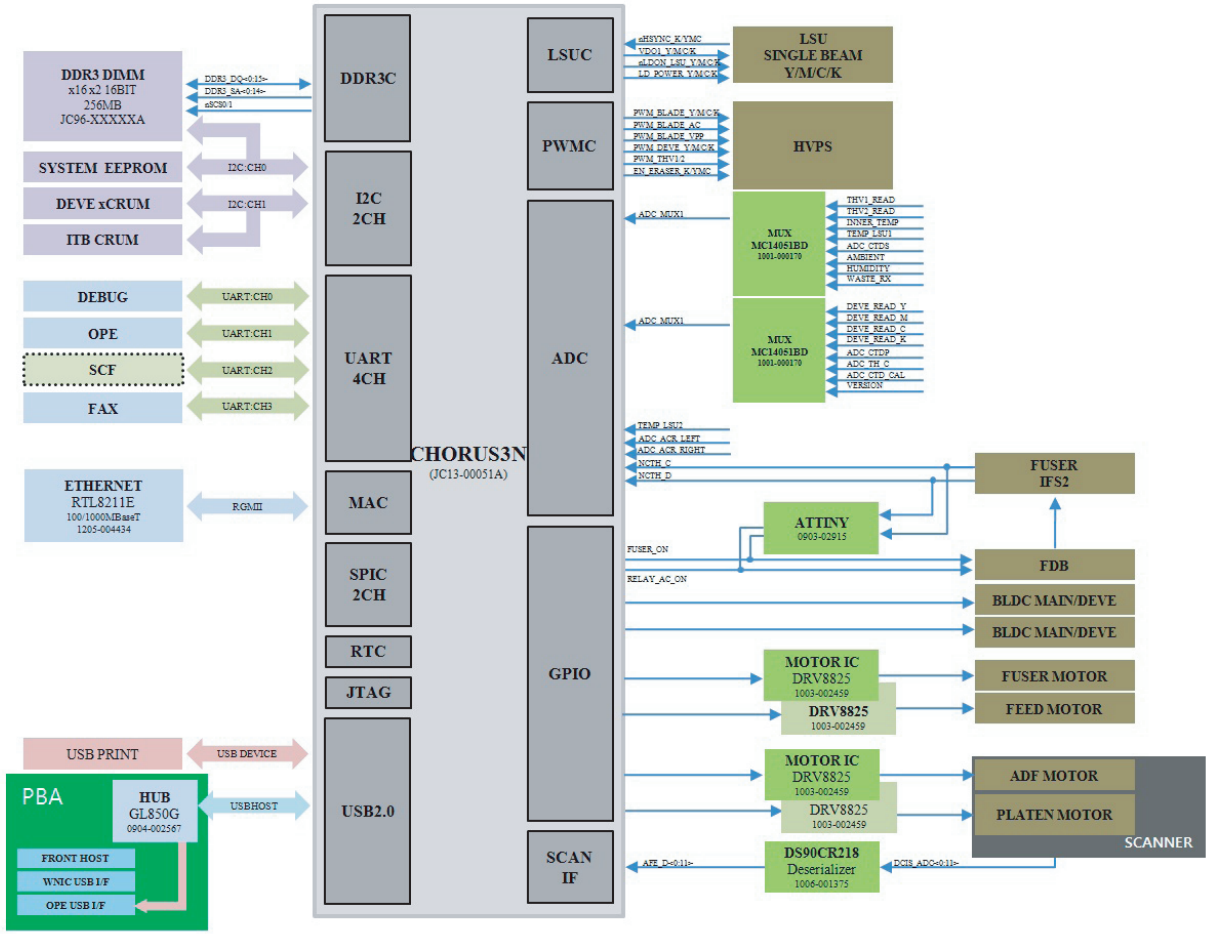
5. System Diagram

5.1. Block Diagram



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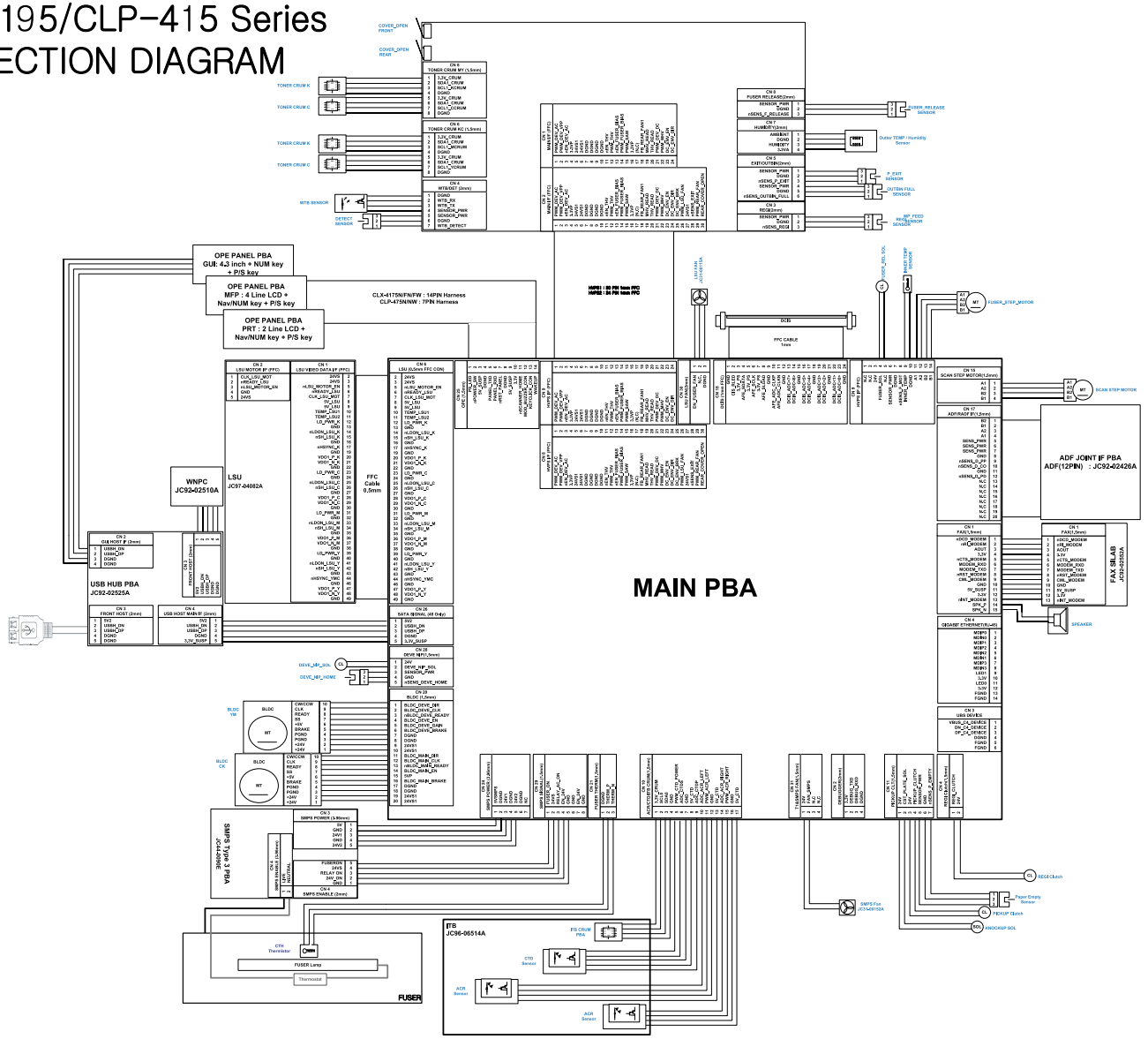
5.2. Connection Diagram

CLX-4195/CLP-415 Series
CONNECTION DIAGRAM



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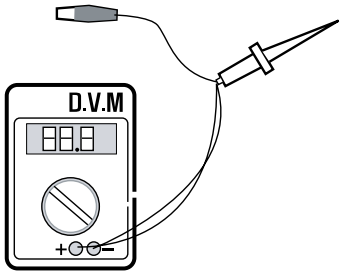
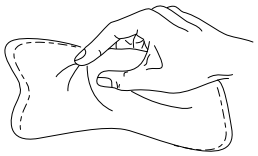
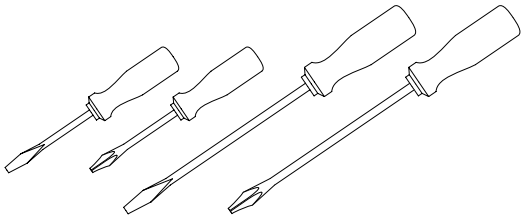
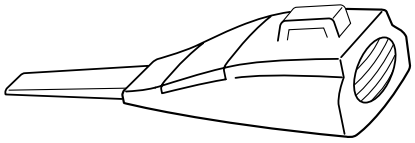
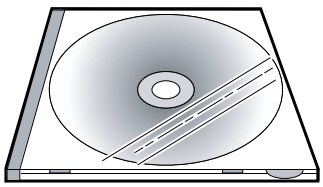
6. Reference Information

This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of test pages and Wireless Network information definition is also included.

6.1. Tool for Troubleshooting

The following tools are recommended safe and easy troubleshooting as described in this service manual.

DVM (Digital Volt Meter) Standard : Indicates more than 3 digits. 	**Cleaning Equipments** Standard : An IPA (Isopropyl Alcohol) dry wipe tissue or a gentle neutral detergent and lint-free cloth. 
Driver Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short). 	**Vacuum Cleaner** 
Tweezers Standard : For general home use, small type. 	**Spring Hook** Standard : For general use
Cotton Swab Standard : For general home use, for medical service. 	**Software (Driver) installation CD ROM** 

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6.2. Glossary

The following glossary helps you get familiar with the product by understanding the terminologies commonly used with printing as well as mentioned in this user's guide and service manual.

802.11	802.11 is a set of standards for wireless local area network (WLAN) communication, developed by the IEEE LAN/MAN Standards Committee (IEEE 802).
802.11b/g/n	802.11b/g/n can share same hardware and use the 2.4 GHz band. 802.11b supports bandwidth up to 11 Mbps, 802.11n supports bandwidth up to 150 Mbps. 802.11b/g/n devices may occasionally suffer interference from microwave ovens, cordless telephones, and Bluetooth devices.
Access point	Access Point or Wireless Access Point (AP or WAP) is a device that connects wireless communication devices together on wireless local area networks (WLAN), and acts as a central transmitter and receiver of WLAN radio signals.
ADF	An Automatic Document Feeder (ADF) is a scanning unit that will automatically feed an original sheet of paper so that the machine can scan some amount of the paper at once.
AppleTalk	AppleTalk is a proprietary suite of protocols developed by Apple, Inc for computer networking. It was included in the original Macintosh (1984) and is now deprecated by Apple in favor of TCP/IP networking.
BIT Depth	A computer graphics term describing the number of bits used to represent the color of a single pixel in a bitmapped image. Higher color depth gives a broader range of distinct colors. As the number of bits increases, the number of possible colors becomes impractically large for a color map. 1-bit color is commonly called as monochrome or black and white.
BMP	A bitmapped graphics format used internally by the Microsoft Windows graphics subsystem (GDI), and used commonly as a simple graphics file format on that platform.
BOOTP	Bootstrap Protocol. A network protocol used by a network client to obtain its IP address automatically. This is usually done in the bootstrap process of computers or operating systems running on them. The BOOTP servers assign the IP address from a pool of addresses to each client. BOOTP enables 'diskless workstation' computers to obtain an IP address prior to loading any advanced operating system.
CCD	Charge Coupled Device (CCD) is a hardware which enables the scan job. CCD Locking mechanism is also used to hold the CCD module to prevent any damage when you move the machine.
Collation	Collation is a process of printing a multiple-copy job in sets. When collation is selected, the device prints an entire set before printing additional copies.
Control Panel	A control panel is a flat, typically vertical, area where control or monitoring instruments are displayed. They are typically found in front of the machine.
Coverage	It is the printing term used for a toner usage measurement on printing. For example, 5% coverage means that an A4 sided paper has about 5% image or text on it. So, if the paper or original has complicated images or lots of text on it, the coverage will be higher and at the same time, a toner usage will be as much as the coverage.
CSV	Comma Separated Values (CSV). A type of file format, CSV is used to exchange data between disparate applications. The file format, as it is used in Microsoft Excel, has become a de facto standard throughout the industry, even among non-Microsoft platforms.
DADF	A Duplex Automatic Document Feeder (DADF) is a scanning unit that will automatically feed and turn over an original sheet of paper so that the machine can scan on both sides of the paper.
Default	The value or setting that is in effect when taking a printer out of its box state, reset, or initialized.
DHCP	A Dynamic Host Configuration Protocol (DHCP) is a client-server networking protocol. A DHCP server provides configuration parameters specific to the DHCP client host requesting, generally, information required by the client host to participate on an IP network. DHCP also provides a mechanism for allocation of IP addresses to client hosts.
DIMM	Dual Inline Memory Module (DIMM), a small circuit board that holds memory. DIMM stores all the data within the machine like printing data, received fax data.

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DLNA	The Digital Living Network Alliance (DLNA) is a standard that allows devices on a home network to share information with each other across the network.
DNS	The Domain Name Server (DNS) is a system that stores information associated with domain names in a distributed database on networks, such as the Internet.
Dot Matrix Printer	A dot matrix printer refers to a type of computer printer with a print head that runs back and forth on the page and prints by impact, striking an ink-soaked cloth ribbon against the paper, much like a typewriter.
DPI	Dots Per Inch (DPI) is a measurement of resolution that is used for scanning and printing. Generally, higher DPI results in a higher resolution, more visible detail in the image, and a larger file size.
DRPD	Distinctive Ring Pattern Detection. Distinctive Ring is a telephone company service which enables a user to use a single telephone line to answer several different telephone numbers.
Duplex	A mechanism that will automatically turn over a sheet of paper so that the machine can print (or scan) on both sides of the paper. A printer equipped with a Duplex Unit can print on both sides of paper during one print cycle.
Duty Cycle	Duty cycle is the page quantity which does not affect printer performance for a month. Generally the printer has the lifespan limitation such as pages per year. The lifespan means the average capacity of print-outs, usually within the warranty period. For example, if the duty cycle is 48,000 pages per month assuming 20 working days, a printer limits 2,400 pages a day.
ECM	Error Correction Mode (ECM) is an optional transmission mode built into Class 1 fax machines or fax modems. It automatically detects and corrects errors in the fax transmission process that are sometimes caused by telephone line noise.
Emulation	Emulation is a technique of one machine obtaining the same results as another. An emulator duplicates the functions of one system with a different system, so that the second system behaves like the first system. Emulation focuses on exact reproduction of external behavior, which is in contrast to simulation, which concerns an abstract model of the system being simulated, often considering its internal state.
Ethernet	Ethernet is a frame-based computer networking technology for local area networks (LANs). It defines wiring and signaling for the physical layer, and frame formats and protocols for the media access control (MAC)/data link layer of the OSI model. Ethernet is mostly standardized as IEEE 802.3. It has become the most widespread LAN technology in use during the 1990s to the present.
EtherTalk	A suite of protocols developed by Apple Computer for computer networking. It was included in the original Macintosh (1984) and is now deprecated by Apple in favor of TCP/IP networking.
FDI	Foreign Device Interface (FDI) is a card installed inside the machine to allow a third party device such as a coin operated device or a card reader. Those devices allow the pay-for-print service on your machine.
FTP	A File Transfer Protocol (FTP) is a commonly used protocol for exchanging files over any network that supports the TCP/IP protocol (such as the Internet or an intranet).
Fuser Unit	The part of a laser printer that fuses the toner onto the print media. It consists of a heat roller and a pressure roller. After toner is transferred onto the paper, the fuser unit applies heat and pressure to ensure that the toner stays on the paper permanently, which is why paper is warm when it comes out of a laser printer.
Gateway	A connection between computer networks, or between a computer network and a telephone line. It is very popular, as it is a computer or a network that allows access to another computer or network.
Grayscale	A shades of gray that represent light and dark portions of an image when color images are converted to grayscale; colors are represented by various shades of gray.
Halftone	An image type that simulates grayscale by varying the number of dots. Highly colored areas consist of a large number of dots, while lighter areas consist of a smaller number of dots.
HDD	Hard Disk Drive (HDD), commonly referred to as a hard drive or hard disk, is a non-volatile storage device which stores digitally-encoded data on rapidly rotating platters with magnetic surfaces.

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IEEE	The Institute of Electrical and Electronics Engineers (IEEE) is an international non-profit, professional organization for the advancement of technology related to electricity.
IEEE 1284	The 1284 parallel port standard was developed by the Institute of Electrical and Electronics Engineers (IEEE). The term "1284-B" refers to a specific connector type on the end of the parallel cable that attaches to the peripheral (for example, a printer).
Intranet	A private network that uses Internet Protocols, network connectivity, and possibly the public telecommunication system to securely share part of an organization's information or operations with its employees. Sometimes the term refers only to the most visible service, the internal website.
IP address	An Internet Protocol (IP) address is a unique number that devices use in order to identify and communicate with each other on a network utilizing the Internet Protocol standard.
IPM	The Images Per Minute (IPM) is a way of measuring the speed of a printer. An IPM rate indicates the number of single-sided sheets a printer can complete within one minute.
IPP	The Internet Printing Protocol (IPP) defines a standard protocol for printing as well as managing print jobs, media size, resolution, and so forth. IPP can be used locally or over the Internet to hundreds of printers, and also supports access control, authentication, and encryption, making it a much more capable and secure printing solution than older ones.
IPX/SPX	IPX/SPX stands for Internet Packet Exchange/Sequenced Packet Exchange. It is a networking protocol used by the Novell NetWare operating systems. IPX and SPX both provide connection services similar to TCP/IP, with the IPX protocol having similarities to IP, and SPX having similarities to TCP. IPX/SPX was primarily designed for local area networks (LANs), and is a very efficient protocol for this purpose (typically its performance exceeds that of TCP/IP on a LAN).
ISO	The International Organization for Standardization (ISO) is an international standard-setting body composed of representatives from national standards bodies. It produces world-wide industrial and commercial standards.
ITU-T	The International Telecommunication Union is an international organization established to standardize and regulate international radio and telecommunications. Its main tasks include standardization, allocation of the radio spectrum, and organizing interconnection arrangements between different countries to allow international phone calls. A -T out of ITU-T indicates telecommunication.
ITU-T No. 1 chart	Standardized test chart published by ITU-T for document facsimile transmissions.
JBIG	Joint Bi-level Image Experts Group (JBIG) is an image compression standard with no loss of accuracy or quality, which was designed for compression of binary images, particularly for faxes, but can also be used on other images.
JPEG	Joint Photographic Experts Group (JPEG) is a most commonly used standard method of lossy compression for photographic images. It is the format used for storing and transmitting photographs on the World Wide Web.
LDAP	The Lightweight Directory Access Protocol (LDAP) is a networking protocol for querying and modifying directory services running over TCP/IP.
LED	A Light-Emitting Diode (LED) is a semiconductor device that indicates the status of a machine.
MAC address	Media Access Control (MAC) address is a unique identifier associated with a network adapter. MAC address is a unique 48-bit identifier usually written as 12 hexadecimal characters grouped in pairs (e. g., 00-00-0c-34-11-4e). This address is usually hard-coded into a Network Interface Card (NIC) by its manufacturer, and used as an aid for routers trying to locate machines on large networks.
MFP	Multi Function Peripheral (MFP) is an office machine that includes the following functionality in one physical body, so as to have a printer, a copier, a fax, a scanner and etc.
MH	Modified Huffman (MH) is a compression method for decreasing the amount of data that needs to be transmitted between the fax machines to transfer the image recommended by ITU-T T.4. MH is a codebook-based run-length encoding scheme optimized to efficiently compress white space. As most faxes consist mostly of white space, this minimizes the transmission time of most faxes.
MMR	Modified Modified READ (MMR) is a compression method recommended by ITU-T T.6.

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Modem	A device that modulates a carrier signal to encode digital information, and also demodulates such a carrier signal to decode transmitted information.
MR	Modified Read (MR) is a compression method recommended by ITUT T.4. MR encodes the first scanned line using MH. The next line is compared to the first, the differences determined, and then the differences are encoded and transmitted.
NetWare	A network operating system developed by Novell, Inc. It initially used cooperative multitasking to run various services on a PC, and the network protocols were based on the archetypal Xerox XNS stack. Today NetWare supports TCP/IP as well as IPX/SPX.
OPC	Organic Photo Conductor (OPC) is a mechanism that makes a virtual image for print using a laser beam emitted from a laser printer, and it is usually green or rust colored and has a cylinder shape. An imaging unit containing a drum slowly wears the drum surface by its usage in the printer, and it should be replaced appropriately since it gets worn from contact with the cartridge development brush, cleaning mechanism, and paper.
Originals	The first example of something, such as a document, photograph or text, etc, which is copied, reproduced or translated to produce others, but which is not itself copied or derived from something else.
OSI	Open Systems Interconnection (OSI) is a model developed by the International Organization for Standardization (ISO) for communications. OSI offers a standard, modular approach to network design that divides the required set of complex functions into manageable, self-contained, functional layers. The layers are, from top to bottom, Application, Presentation, Session, Transport, Network, Data Link and Physical.
PABX	A private automatic branch exchange (PABX) is an automatic telephone switching system within a private enterprise.
PCL	Printer Command Language (PCL) is a Page Description Language (PDL) developed by HP as a printer protocol and has become an industry standard. Originally developed for early inkjet printers, PCL has been released in varying levels for thermal, dot matrix printer, and laser printers.
PDF	Portable Document Format (PDF) is a proprietary file format developed by Adobe Systems for representing two dimensional documents in a device independent and resolution independent format.
PostScript(PS)	PostScript (PS) is a page description language and programming language used primarily in the electronic and desktop publishing areas. - that is run in an interpreter to generate an image.
Printer Driver	A program used to send commands and transfer data from the computer to the printer.
Print Media	The media like paper, envelopes, labels, and transparencies which can be used in a printer, a scanner, a fax or, a copier.
PPM	Pages Per Minute (PPM) is a method of measurement for determining how fast a printer works, meaning the number of pages a printer can produce in one minute.
PRN file	An interface for a device driver, this allows software to interact with the device driver using standard input/output system calls, which simplifies many tasks.
Protocol	A convention or standard that controls or enables the connection, communication, and data transfer between two computing endpoints.
PSTN	The Public-Switched Telephone Network (PSTN) is the network of the world's public circuit-switched telephone networks which, on industrial premises, is usually routed through the switchboard.
RADIUS	Remote Authentication Dial In User Service (RADIUS) is a protocol for remote user authentication and accounting. RADIUS enables centralized management of authentication data such as usernames and passwords using an AAA (authentication, authorization, and accounting) concept to manage network access.
Resolution	The sharpness of an image, measured in Dots Per Inch (DPI). The higher the dpi, the greater the resolution.
SMB	Server Message Block (SMB) is a network protocol mainly applied to share files, printers, serial ports, and miscellaneous communications between nodes on a network. It also provides an authenticated Interprocess communication mechanism.

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SMTP	Simple Mail Transfer Protocol (SMTP) is the standard for e-mail transmissions across the Internet. SMTP is a relatively simple, text based protocol, where one or more recipients of a message are specified, and then the message text is transferred. It is a client server protocol, where the client transmits an email message to the server.
SSID	Service Set Identifier (SSID) is a name of a wireless local area network (WLAN). All wireless devices in a WLAN use the same SSID in order to communicate with each other. The SSIDs are case-sensitive and have a maximum length of 32 characters.
Subnet Mask	The subnet mask is used in conjunction with the network address to determine which part of the address is the network address and which part is the host address.
TCP/IP	The Transmission Control Protocol (TCP) and the Internet Protocol (IP); the set of communications protocols that implement the protocol stack on which the Internet and most commercial networks run.
TCR	Transmission Confirmation Report (TCR) provides details of each transmission such as job status, transmission result and number of pages sent. This report can be set to print after each job or only after failed transmissions.
TIFF	Tagged Image File Format (TIFF) is a variable-resolution bitmapped image format. TIFF describes image data that typically come from scanners. TIFF images make use of tags, keywords defining the characteristics of the image that is included in the file. This flexible and platform-independent format can be used for pictures that have been made by various image processing applications.
Toner Cartridge	A kind of bottle or container used in a machine like a printer which contains toner. Toner is a powder used in laser printers and photocopiers, which forms the text and images on the printed paper. Toner can be fused by a combination of heat/pressure from the fuser, causing it to bind to the fibers in the paper.
TWAIN	An industry standard for scanners and software. By using a TWAINcompliant scanner with a TWAIN-compliant program, a scan can be initiated from within the program. It is an image capture API for Microsoft Windows and Apple Macintosh operating systems.
UNC Path	Uniform Naming Convention (UNC) is a standard way to access network shares in Window NT and other Microsoft products. The format of a UNC path is: \\<servername>\<sharename>\<Additional directory>
URL	Uniform Resource Locator (URL) is the global address of documents and resources on the Internet. The first part of the address indicates what protocol to use, the second part specifies the IP address or the domain name where the resource is located.
USB	Universal Serial Bus (USB) is a standard that was developed by the USB Implementers Forum, Inc., to connect computers and peripherals. Unlike the parallel port, USB is designed to concurrently connect a single computer USB port to multiple peripherals.
Watermark	A watermark is a recognizable image or pattern in paper that appears lighter when viewed by transmitted light. Watermarks were first introduced in Bologna, Italy in 1282; they have been used by papermakers to identify their product, and also on postage stamps, currency, and other government documents to discourage counterfeiting.
WEP	Wired Equivalent Privacy (WEP) is a security protocol specified in IEEE 802.11 to provide the same level of security as that of a wired LAN. WEP provides security by encrypting data over radio so that it is protected as it is transmitted from one end point to another.
WIA	Windows Imaging Architecture (WIA) is an imaging architecture that is originally introduced in Windows Me and Windows XP. A scan can be initiated from within these operating systems by using a WIAcompliant scanner.
WPA	Wi-Fi Protected Access (WPA) is a class of systems to secure wireless (Wi-Fi) computer networks, which was created to improve upon the security features of WEP.
WPA-PSK	WPA-PSK (WPA Pre-Shared Key) is special mode of WPA for small business or home users. A shared key, or password, is configured in the wireless access point (WAP) and any wireless laptop or desktop devices. WPA-PSK generates a unique key for each session between a wireless client and the associated WAP for more advanced security.

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WPS	The Wi-Fi Protected Setup (WPS) is a standard for establishing a wireless home network. If your wireless access point supports WPS, you can configure the wireless network connection easily without a computer.
XPS	XML Paper Specification (XPS) is a specification for a Page Description Language (PDL) and a new document format, which has benefits for portable document and electronic document, developed by Microsoft. It is an XML-based specification, based on a new print path and a vector-based device-independent document format.

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GSPN (GLOBAL SERVICE PARTNER NETWORK)

Area	Web Site
Europe, MENA, CIS, Africa	https://gspn1.samsungcsportal.com
E.Asia, W.Asia, China, Japan	https://gspn2.samsungcsportal.com
N.America, S.America	https://gspn3.samsungcsportal.com

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